Eco Engineering

Installation Manual

Easypell®
16 — 32kW

ENGLISH

Eco Engineering

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Subject to modifcations

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1 Dear Customer

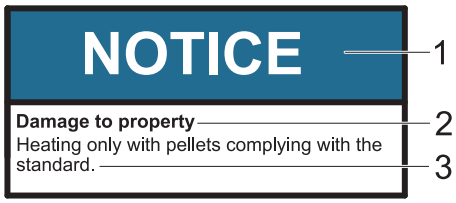
- This manual is intended to help you operate the product safely, properly and economically.
- Please read this manual right through and take note of the safety warnings.
- Keep all documentation supplied with this unit in a safe place for future reference.
  Please pass on the documentation to the new user if you decide to part with the unit at a later date.
- Please contact your authorised dealer if you have any questions.

2 Types of safety warning sign

The warning signs use the following symbols and texts.

Types of safety warning sign

1. Risk of injury
2. Consequences of risk
3. Avoiding risk



1. Risk of injury:

Danger - indicates a situation that could lead to death or life-threatening injury.

Warning - indicates a situation that could lead life-threatening or serious injury.

Caution - indicates a situation that could lead to injury.

Note - indicates a situation that could lead to property damage.

2. Consequences of risk

Effects and consequences resulting from incorrect operation.

3. Avoiding risk

Observing safety instructions ensures that the heating system is operated safely

3 Prerequisites for installing a pellet boiler

You must fulfill the following conditions before operating a fully automatic pellet boiler.

3.1 Guidelines and standards for installing a pellet boiler

Overview of standards and guidelines applying to the installation of a pellet boiler.

Check whether you need to obtain planning permission or approval from the authorities for installing a new heating system or changing your existing system. Legislation in your country must be observed.

Flue gas system	EN 13384–1	Legislation in your country must be observed.
Building and fire prevention regulations		Legislation in your country must be observed.
Type of installation	FC 42x	Fireplace with a flue gas fan for connection to an air exhaust system. The combustion air line from air shaft and the connecting piece to the chimney are part of the fireplace.
	FC 52x	Fireplace with a flue gas for connection to a chimney. The combustion air line from outside and the connecting piece to the chimney are part of the fireplace.
Sound insulation	DIN 4109	Please note the building-unique demands on sound insulation.

3.2 Central heating room

The pellet boiler is installed in the central heating room.

1. **Safety instructions for the heating room**

   DANGER

   Risk of fire
   Do not store flammable materials or liquids in the vicinity of the pellet boiler.
   Do not permit unauthorised persons to enter the central heating room - children are to be kept out.
   Always close the boiler door.

2. **Air supply and ventilation of central heating room**

   The central heating room must be fitted with air supply and ventilation openings (at least 200cm^2). Legislation in your country must be observed.

3. **Combustion air supply**

   The pellet boiler needs a supply of combustion air.

   Never operate the pellet boiler if the air intake openings are partially or completely closed.

   Contaminated combustion air can cause damage to the pellet boiler. Never store of use cleaning detergents containing chlorine, nitrobenzene or halogen in the room where the heating system is installed, if combustion air is drawn directly from the room.

   Do not hang out washing in the central heating room.

   Prevent dust from collecting at the combustion air intake to the pellet boiler.

4. **Damage due to frost and humid air**

   The central heating room must be frost-proof to ensure trouble-free operation of the heating system. The temperature of the central heating room must not fall below –3°C and must not exceed +30°C. The air humidity in the central heating room must not exceed 70%.

5. **Danger for animals**

   Make sure that household pets and other small animals cannot enter the central heating room. Fit mesh

over any openings.

6. **Flooding**

   If there is a risk of flooding, switch off the pellet boiler in good time and disconnect from the power supply before water enters the central heating room. You must have all components that come into contact with water replaced, before you start up the pellet boiler again.

7. **Cleaning**

   Clean the flue gas tube and chimney regularly.

NOTICE

Oxidation of chimney
Do not use metal brushes to clean chimneys made of stainless steel.
Legislation in your country must be observed.

3.3 Flue gas system

The flue gas system consists of a chimney and a flue gas tube. The flue gas tube connects the pellet heating system to the chimney. The chimney leads the flue gas from the pellet heating system out into the open.

1. **Design of the chimney**

   The dimensions and design of the chimney is very important. The chimney must be able to ensure sufficient draft to safely draw away the flue gas regardless of the status of the boiler. Low flue gas temperatures can cause sooting and moisture damage on chimneys that are not insulated. For this reason **moisture-resistant chimneys** (stainless steel or ceramic) should be used. Chimneys made of plastic are not permitted. An existing chimney that is not damp-resistant needs to be rennovated before use.

Boiler size	Easypell 16	Easypell 20	Easypell 25	Easypell 32
Flue gas tube diameter (at boiler) – [mm]	130		150	
Chimney diameter	as per chimney calculation, EN 13384–1			
Chimney design	damp-resistant			

2. **Flue gas temperature**

Boiler type	Easypell 16	Easypell 20	Easypell 25	Easypell 32
Flue gas temperature rating	160°C			
Flue gas temperature partial load	100°C			

   The dewpoint of flue gas with wood pellets (max. 10% water content) is approx. 50°C.

3. **Chimney draft**

   The diameter of the chimney must be selected based on a chimney calculation according to EN 13 384–1. The suction effect of the chimney draft must extend as far as the chimney connection. The maximum flow rate that can be drawn through the chimney limits the maximum performance of the pellet boiler. The boiler performance must be reduced if the chimney does not possess the necessary cross-section. This may only be performend by authorised personnel.

3.4 Safety systems

The following safety measures are the prerequisite for safe operation of your system.

Emergency stop switch

Every heating system must be able to be switched off with an Emergency Stop switch. The Emergency Stop switch must be inside the central heating room.

Safety valve

The hydraulic system must be equipped with a safety valve. This valve opens when the pressure inside the heating system increases to max. 3 bar. The safety valve must:

–be installed at the highest point of the boiler,
–must not be locked,
–and must be within 1 metre of the boiler.

Safety temperature sensor

The pellet boiler is equipped with a safety temperature sensor. This is located on the pellet boiler. If the boiler temperature exceeds 95°C then the heating system switches off.

Expansion tank

All heating systems must be equipped with a pressurised expansion tank. The plumber or heating system installer must dimension the expansion tanks according to the dimensions of the hydraulic system.

NOTICE

Starting up
Starting up for the first time has to be performed only by an authorized service technician.

3.5 Operation of a pellet boiler with an existing boiler

There are different regulations in the different European countries. Please mind the prescription of your country.

4 Warnings and safety instructions

Observing safety instructions ensures that the heating system is operated safely.

4.1 Basic safety instructions

- Never get yourself into danger; give own safety the utmost priority.
- Keep children away from the central heating room and storage room.
- Observe all safety warnings on the boiler and in this user manual.
- Observe all instructions relating to maintenance, servicing and cleaning.
- The pellet heating system may only be installed and started up for the first time by an authorised plumber. Professional installation and start up is the prerequisite for safe and economical operation.
- Never make any changes to the heating system or flue gas system.
- Never close or remove safety valves.

4.2 Warning signs

DANGER

Risk of poisoning
Make sure that the pellet boiler is supplied with sufficient combustion air.
The openings in the combustion air inlet must never be partially or completely closed.
Ventilation systems, central vacuum cleaning systems, extractor fans, air conditioning systems, flue gas blowers, dryers or similar equipment must never be allowed to draw air from the central heating room and cause a drop in pressure.
The boiler must be connected tight to the chimney using a flue gas tube.
Clean the chimney and the flue gas tube at regular intervals.
The central heating room and pellet storage room must be sufficiently supplied with air and ventilated.
Before entering the storage room it must be ventilated with sufficient air and the heating system switched off.

DANGER

Risk of electric shock
Switch off the system before performing work on the boiler.

DANGER

Risk of explosion
Never burn petrol, diesel, engine oil or other explosive materials.
Never use liquids or chemicals to ignite the pellets.
Switch off the heating system before filling the storage room.

DANGER

Risk of fire
Do not store any flammable materials in the central heating room. Do not hang out any washing in the central heating room.
Always close the boiler door.

WARNING

Risk of burns
Do not touch the flue spigot or the flue gas tube.
Do not reach into the ash chamber.
Use gloves to empty the ash box.
Do not clean the boiler until it has been allowed to cool down.

CAUTION

Risk of cut injuries due to sharp edges.
Use gloves for performing all work on the boiler.

NOTICE

Damage to property
Heat the pellet heating system using pellets that comply with EN 14961-2 class A1 and A2 only.

NOTICE

Damage to property
Do not use the heating system if it, or any of its components, come into contact with water.
If water damage occurs, have the heating system checked by an service technician and have any damaged parts replaced.

4.3 What to do in an emergency

DANGER

Risk to life
Never get yourself into danger; give own safety the utmost priority.

What to do in the event of a fire

- Switch off the heating system.
- Call the fire brigade
- Use approved fire extinguishers (fire protection class ABC).

What to do if you smell smoke

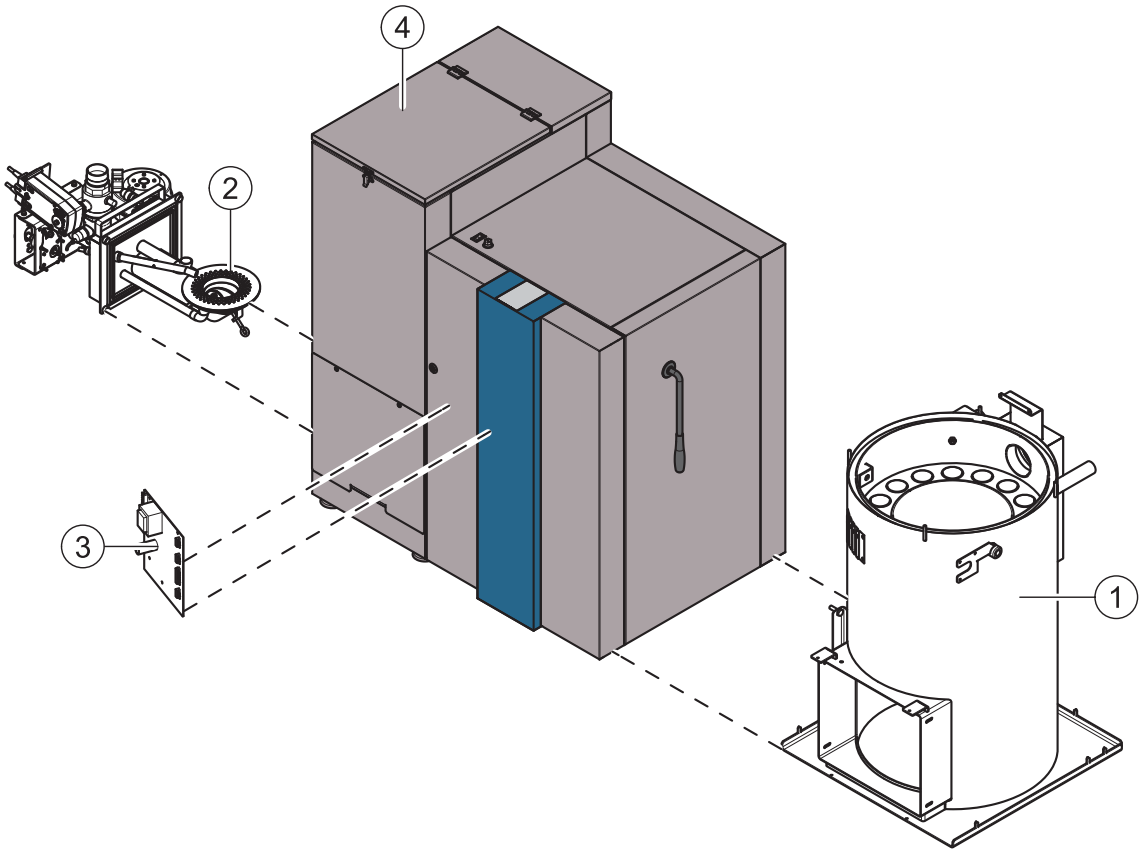
- Switch off the heating system.
- Close the doors leading to living areas.
- Ventilate the central heating room.

5 The Easypell

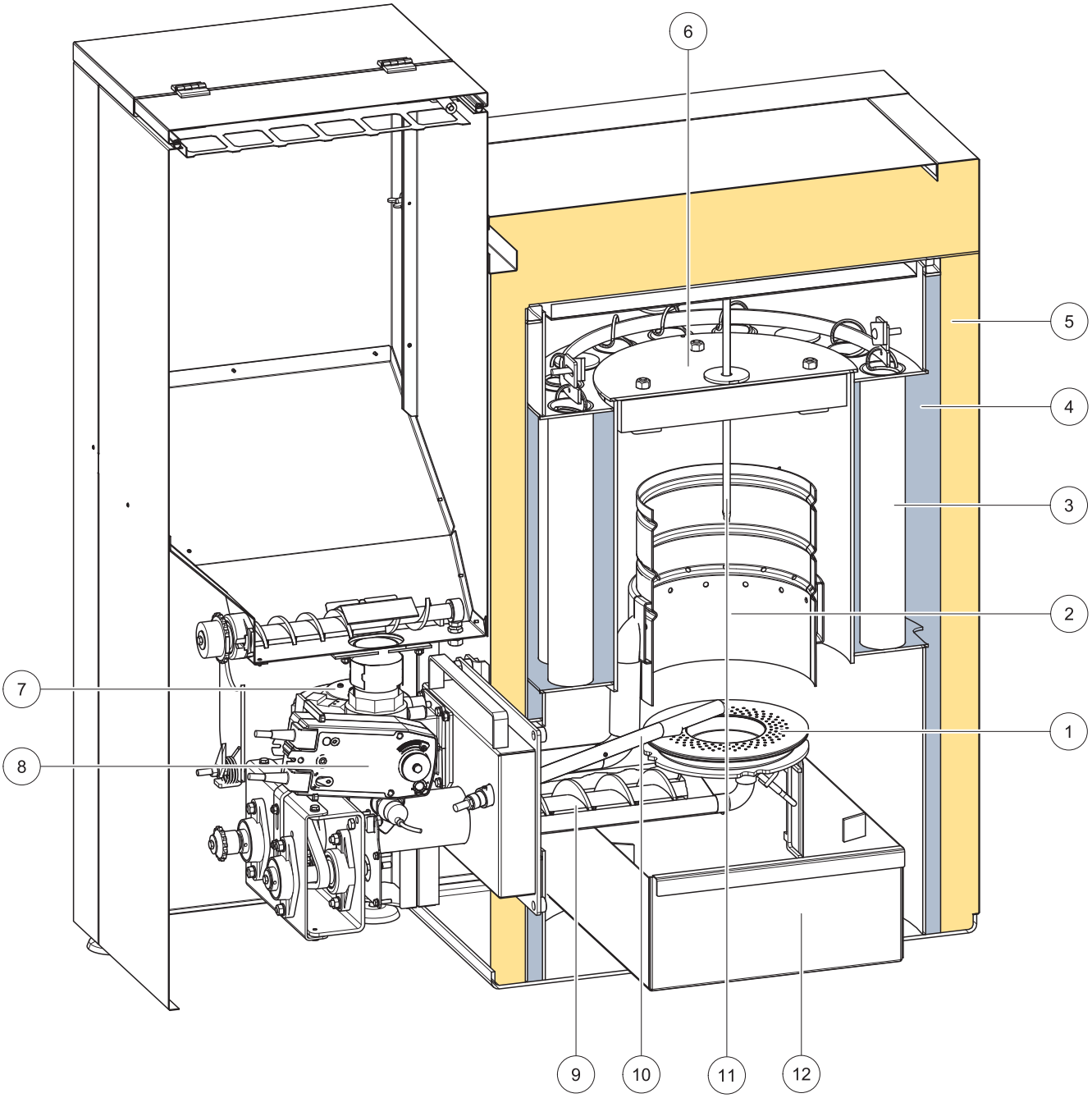
Easypell types and power ratings
Eco Engineering offers the Easypell with the following power ratings: 16, 20, 25 and 32kW.

Note:
Refer to the data plate for the power rating of your Easypell. The data plate is located on the rear side of the boiler. Here you find the type designation, manufacturer's serial number and year of build.

Key components of the Easypell



1	Boiler (heat exchanger)	3	Boiler controller
2	Burner	4	Pellet hopper



1	Burner plate	7	Suction fan
2	Flame tube	8	Anti-blowback system
3	Heat exchanger	9	Burner auger
4	Boiler water	10	Electronic ignition
5	Boiler insulation	11	Combustion chamber sensor
6	Combustion chamber cover	12	Ash box

6 Bringing the pellet boiler into the central heating room

This section describes the prerequisites as well as the working sequence required.

1. Transport
2. Notes on bringing the unit into the building
3. Casing parts
4. Dismantling the casing parts

6.1 Transport

Eco Engineering supplies the pellet boiler on a pallet. The pellet boiler is ready to be connected.
The control unit for the boiler controller is integrated into the control panel.

If it is not possible to bring the boiler into the building at ground level, remove the casing, the burner, the boiler controller and the pellet hopper. This will reduce the weight of the unit and make it easier to carry.

NOTICE

Contamination and corrosion
Make sure that the pellet boiler is located under a roof if it needs to be stored outside before it is transported/ brought into the building.

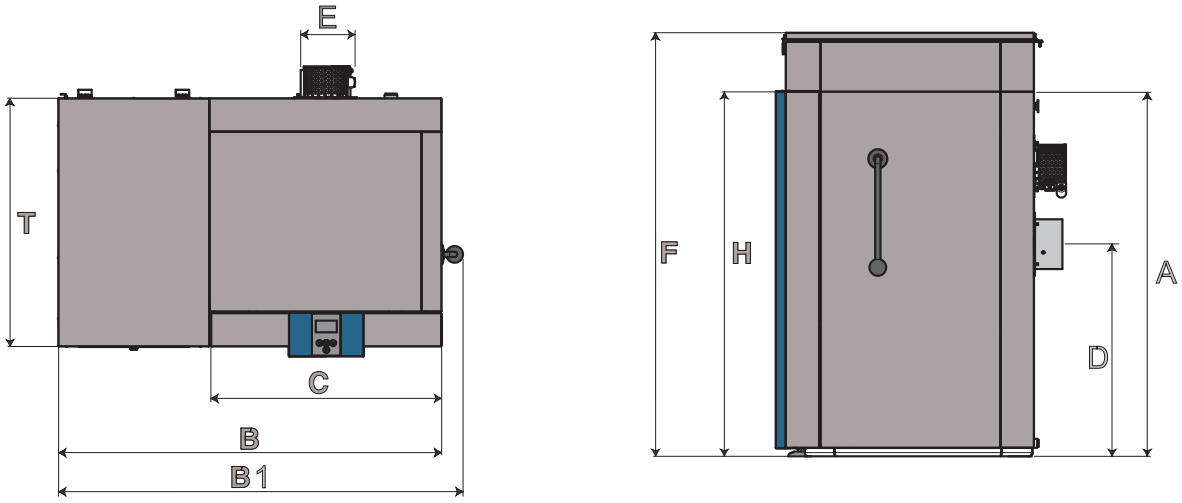
6.2 Notes on bringing the unit into the building

Before bringing the unit into the building, check the dimensions of all doors to ensure that the boiler has sufficient clearance and can be set up properly.

Minimum door width — max. unit dimension

Easypell 16 / 20	16 — 20 kW	690 mm
Easypell 25 / 32	25 — 32 kW	720

Boiler dimensions



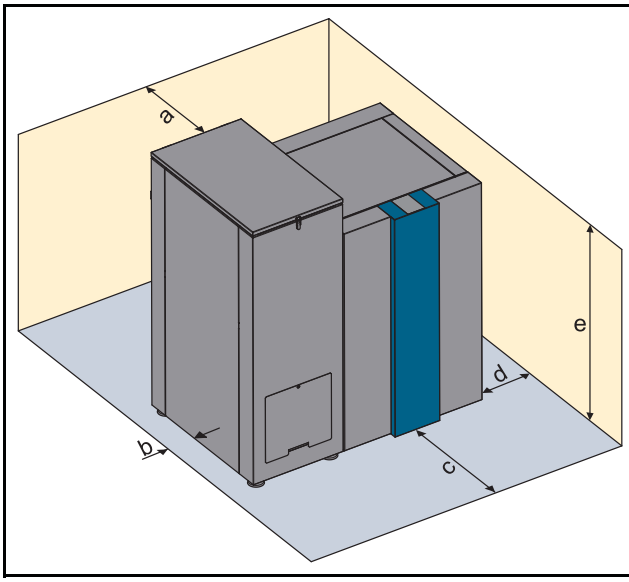
Dimensions in mm	**Easypell 16**	**Easypell 20**	**Easypell 25**	**Easypell 32**
A: flow- return	905	905	1110	1110
B: overall width of pellet boiler	1210	1210	1227	1227
B1: Width with cleaning lever	1206	1206	1232	1232
C: width of boiler casing	695	695	728,5	728,5
D: Hight flue gas tube	645	645	844	844
E: Diameter flue gas tube	130	130	150	150
H: height of boiler casing	1091	1091	1242	1242
F: height hopper	1267	1267	1517	1517
T: depth of boiler casing	752	752	796,5	796,5

Boiler Weight

Dimensions in kg	**Easypell 16**	**Easypell 20**	**Easypell 25**	**Easypell 32**
Weight of boiler with casing, hopper and burner	350	350	430	430

Minimum clearance dimensions required

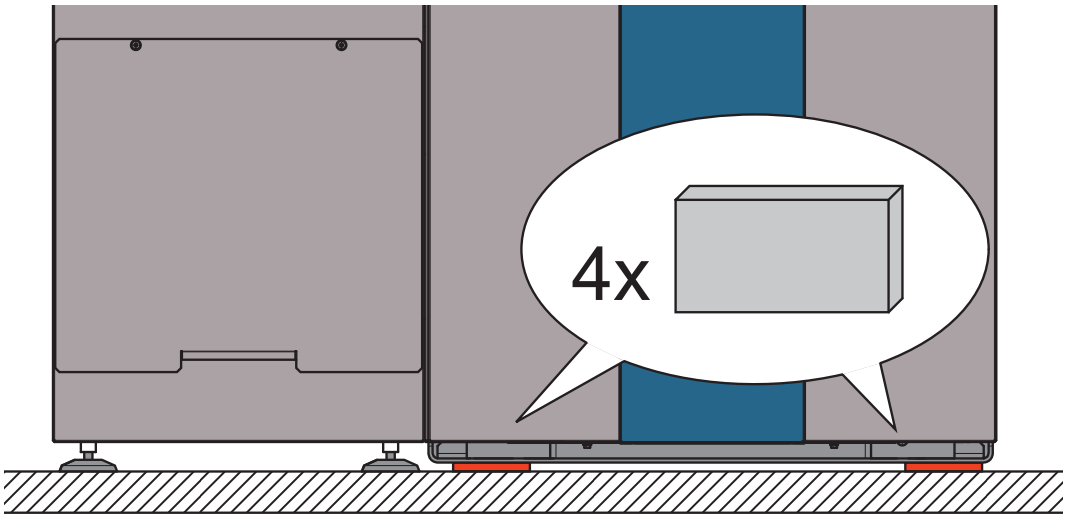
Note:
To install the heating system properly and ensure economical operation, you need to make sure that minimum clearance dimensions indicated below are observed when setting up the boiler.
In addition, make sure that legislation in your country is complied with relating to the minimum clearance of the flue gas tube.



a	Min. clearance of flue gas connection from wall or part of building	450 mm
b	Min. clearance of side of boiler from wall or part of building	200 mm
c	Min. clearance of front of boiler from wall or part of building	700 mm
d	Min. clearance of side of burner from wall or part of building	300 mm
e	Min. room height	1950 mm

Note:
Legislation in your country must be observed!

Placement of rubber plates

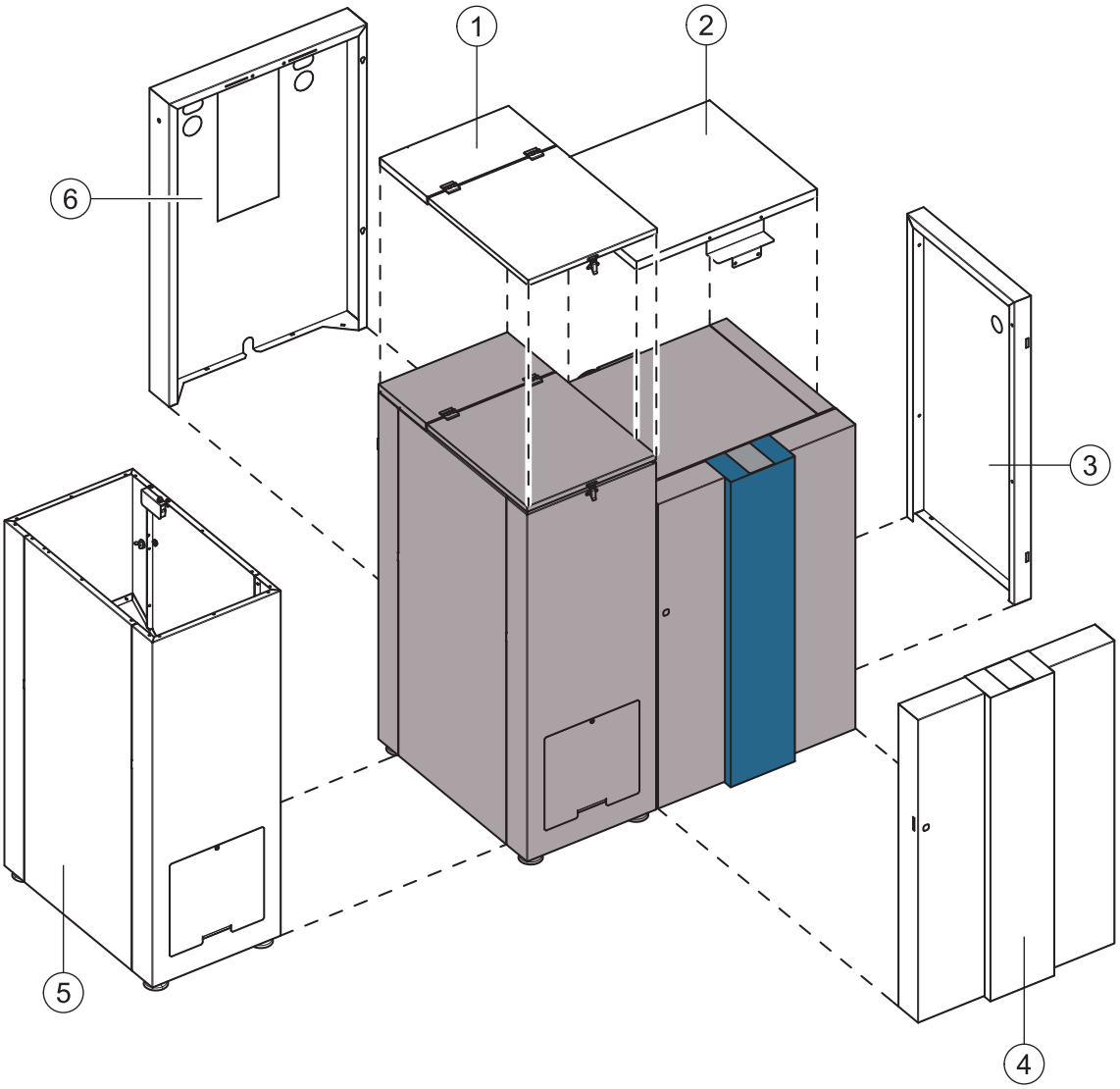


NOTICE

The pellet heating boiler must be placed on the supplied rubber plates.

6.3 Casing parts

The boiler is protected by a casing on all sides. The casing parts prevent contact with hot, moving and live components. They also give Easypell pellet boilers a unique appearance.



1	Pellet hopper casing cover	4	Boiler door
2	Boiler casing cover	6	Pellet hopper casing
3	Boiler side panel	7	Boiler rear panel

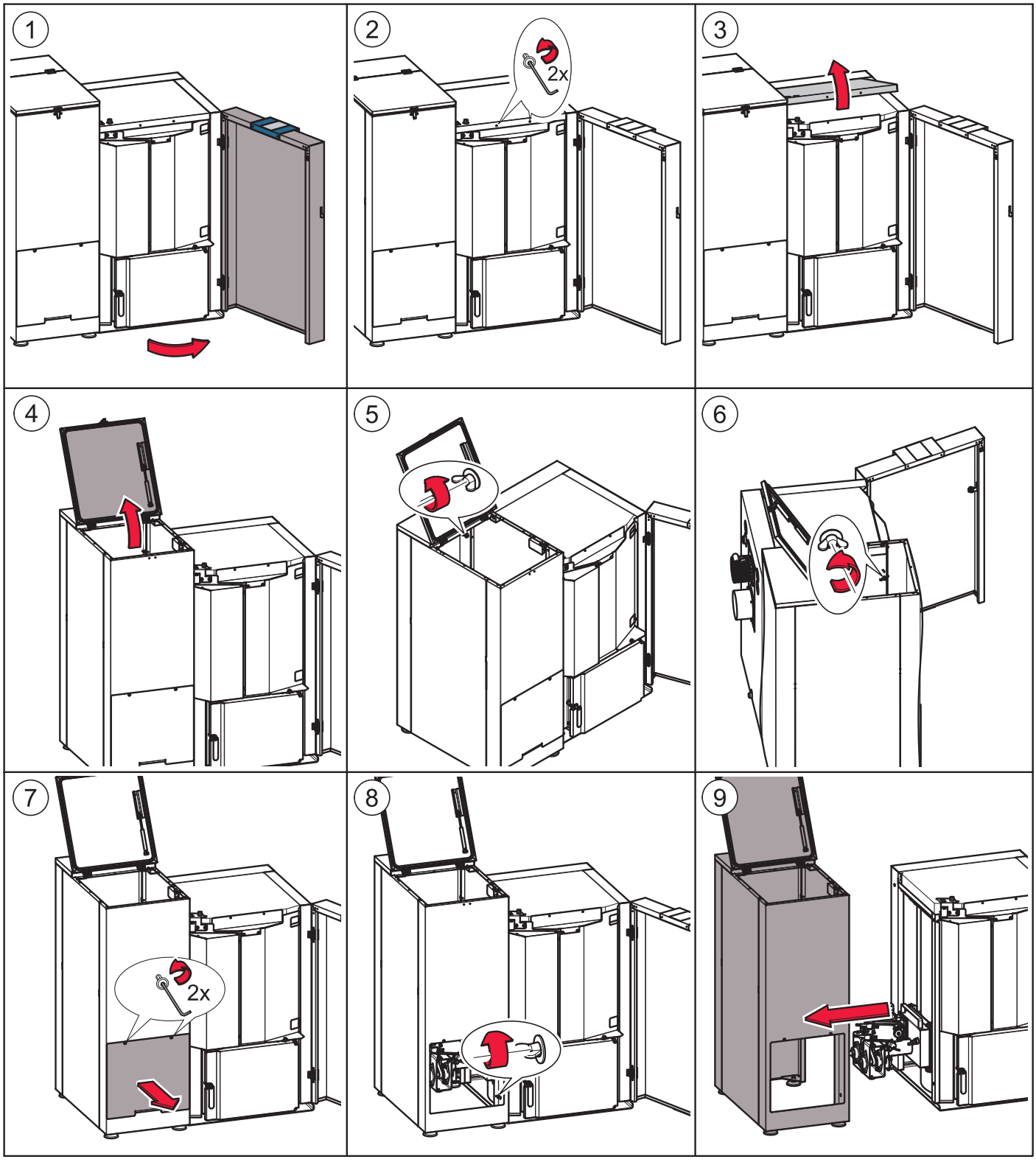
6.4 Dismantling the burner casing and the burner

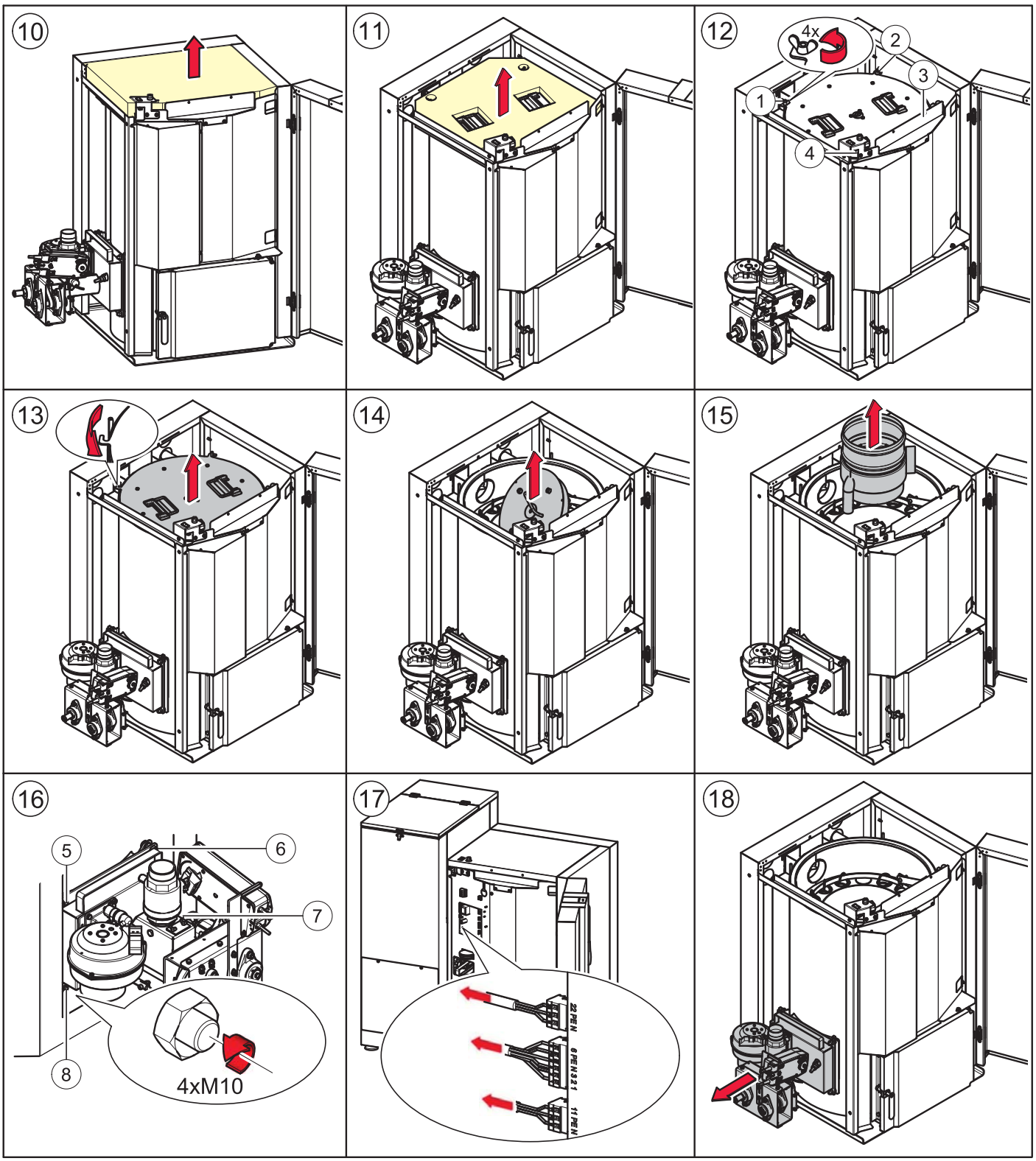
Dismantle the pellet boiler as far as necessary if site conditions require, so that the unit can be brought safely into the building.

The complete dismantling of all components described here is divided into the following sections:

1. Dismantling the burner casing and the burner
2. Dismantling the boiler door
3. Dismantling the boiler casing

6.4.1 Dismantling the burner casing and burner

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11
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4x
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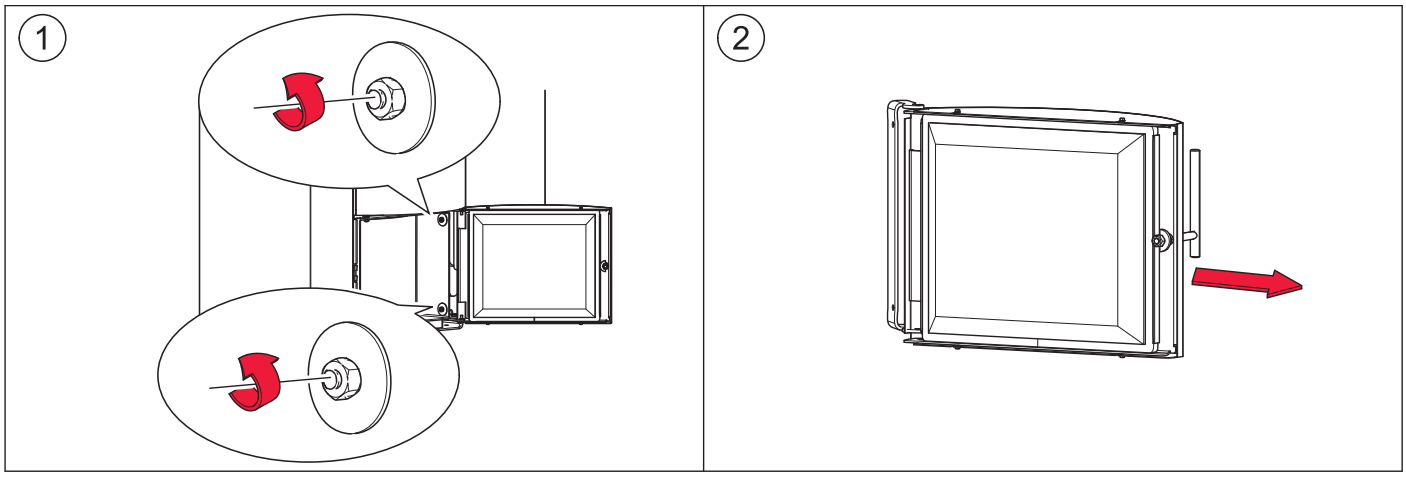
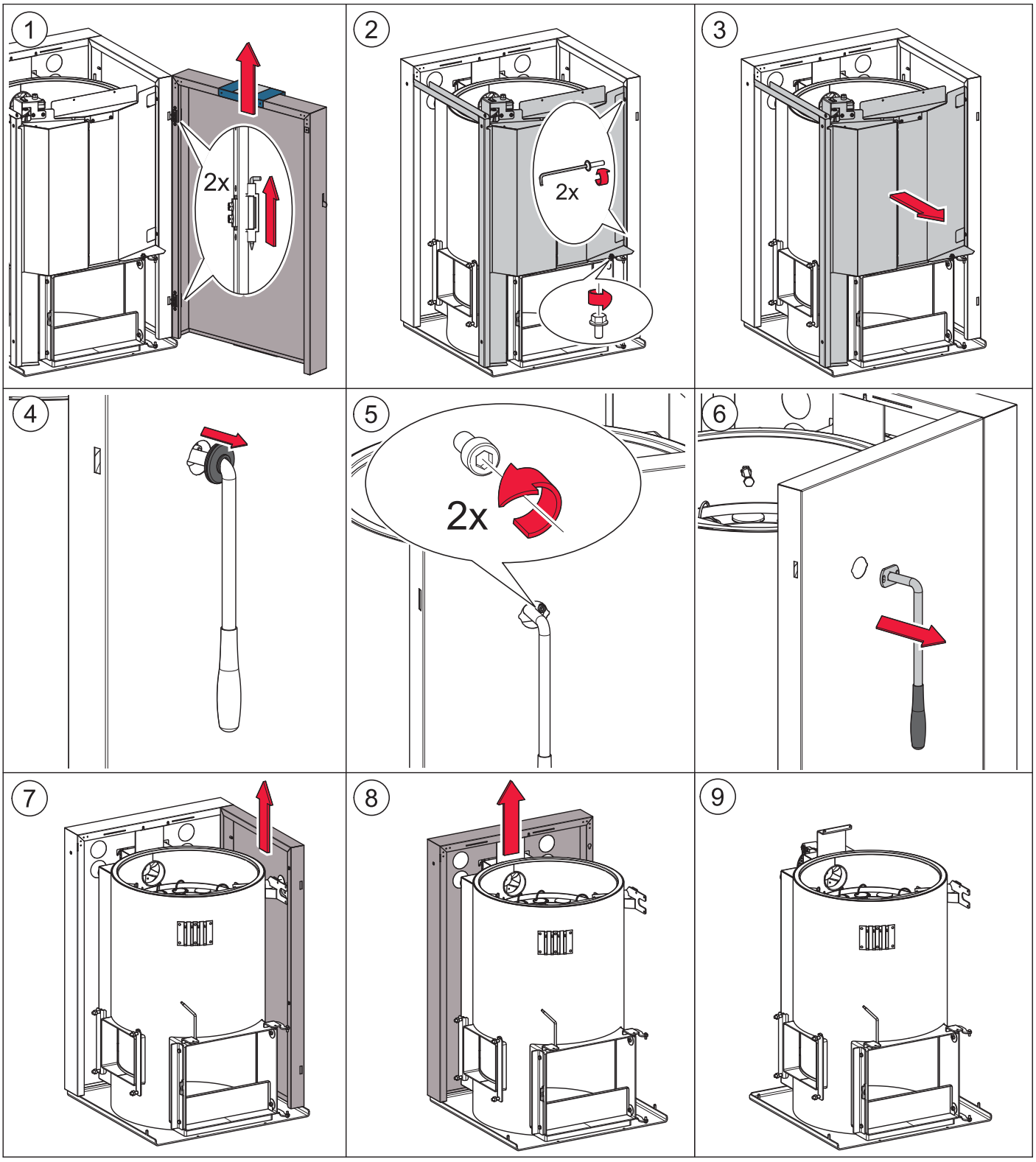
2PEN
6PEN831
11PEN
18

6.4.2 Dismantling the boiler door



6.4.3 Dismantling the boiler casing



7 Adjusting power rating

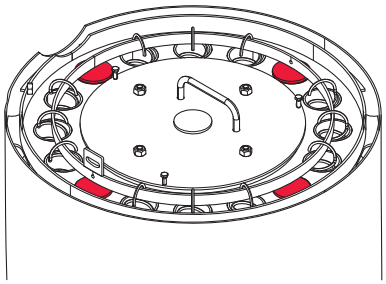
On Eco Engineering pellet boilers the effective heat exchanger area can be changed within a assembly group. This involves opening or closing the heat exchanger tubes. The power rating of the pellet boiler is adjusted as a result.
Eco Engineering supplies the pellet boilers in one of two sizes / outputs. Always observe the rating on the nameplate. The EasyPell 16 / 20 must always be set at or between 16 to 20KW. The EasyPell 25 / 32 must always be set at or between 25 to 32KW. There can be no exception to this!

7.1 Installing the turbulators and closure plugs

Heat transfer takes place in the heat exchanger tubes. The heat exchanger tubes are fitted with cleaning springs that also act as turbolators.

On the Easypell 16 and Easypell 25 boilers, some of these heat exchangers are sealed off with sealing caps. In this way, the heat exchanger area is adapted to the rated output.

Sealing caps:



Increasing the boiler power rating

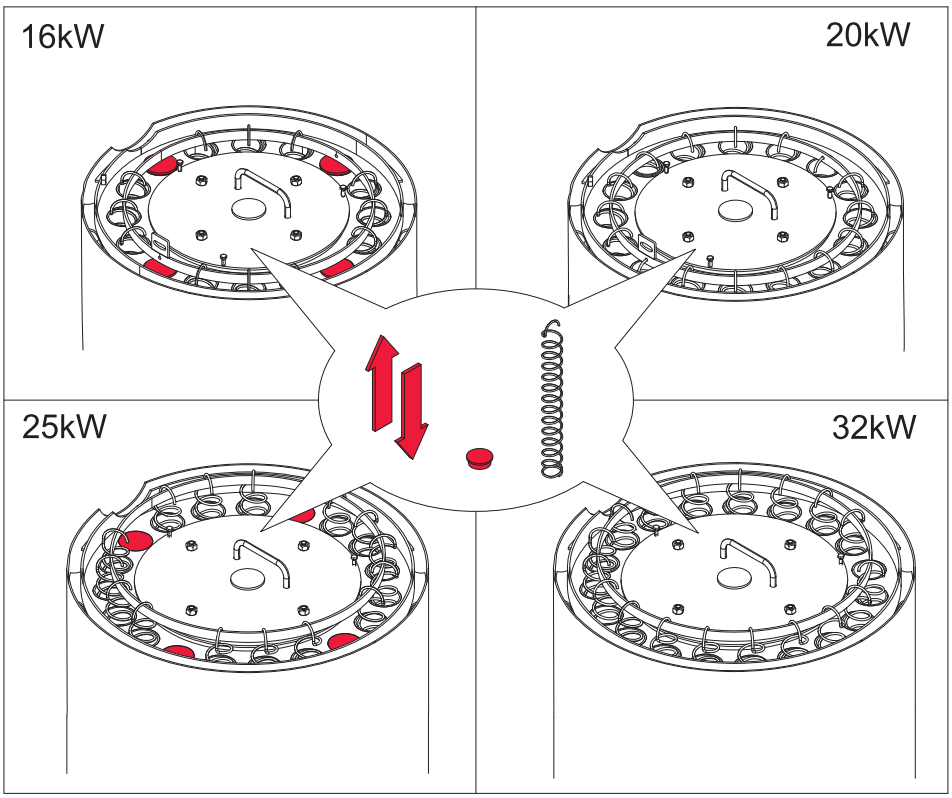
1. Remove the closure plugs from the ends of the heat exchanger tubes.
2. Insert the turbulators supplied into the heat exchanger tubes.
3. Hook the turbulators onto the ring of the cleaning system.

Reducing the boiler power rating

1. Unhook the turbulators from the ring of the cleaning system.
2. Remove the cleaning springs/turbulators from the heat exchanger tubes.
3. Close off the heat exchanger tubes using the closure plugs supplied.

Number of cleaning springs (tubulators) to be removed/installed:

Boiler power ratings as per data plate	Factory-set boiler power rating	
16 kW	16 kW	No adjustment required
20 kW	16 kW	Insert another 4 turbulators
25 kW	25 kW	No adjustment required
32 kW	25 kW	Insert another 4 turbulators



Only the adjustment of the system by an authorized Eco Engineering service technician can guarantee an optimal level of efficiency and with that a low-emission operation.

Starting up for the first time has to be performed only by an authorized Eco Engineering service technician.

8 Connecting up the hydraulics

The hydraulic connections are located on the rear side of the boiler.

DANGER

Risk of explosion
You may connect up the pellet boiler only after an authorised plumber has installed the hydraulic system completely with all safety devices.

NOTICE

Water damage, damage to pellet boiler
Only an authorised plumber may connect up hydraulics on the pellet boiler. Check the hydraulic system for leaks before starting up.

1. **Hydraulic schematics**

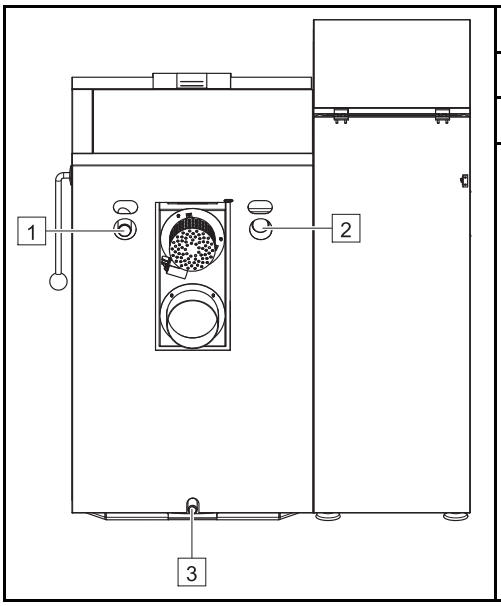
   Always refer to the Eco Engineering hydraulic schematics when connecting up the pellet boiler. The Eco Engineering hydraulic schematics are available from your Eco Engineering sales partner or from the Eco Engineering website.

2. **Connections**

   The connections between the pellet boiler and the hydraulic system must be disconnectable.

3. **Drain connection**

   When you install the pellet boiler, remove the plug from the ENTLEERUNG connection and fit a 1/2" diameter shut-off valve.

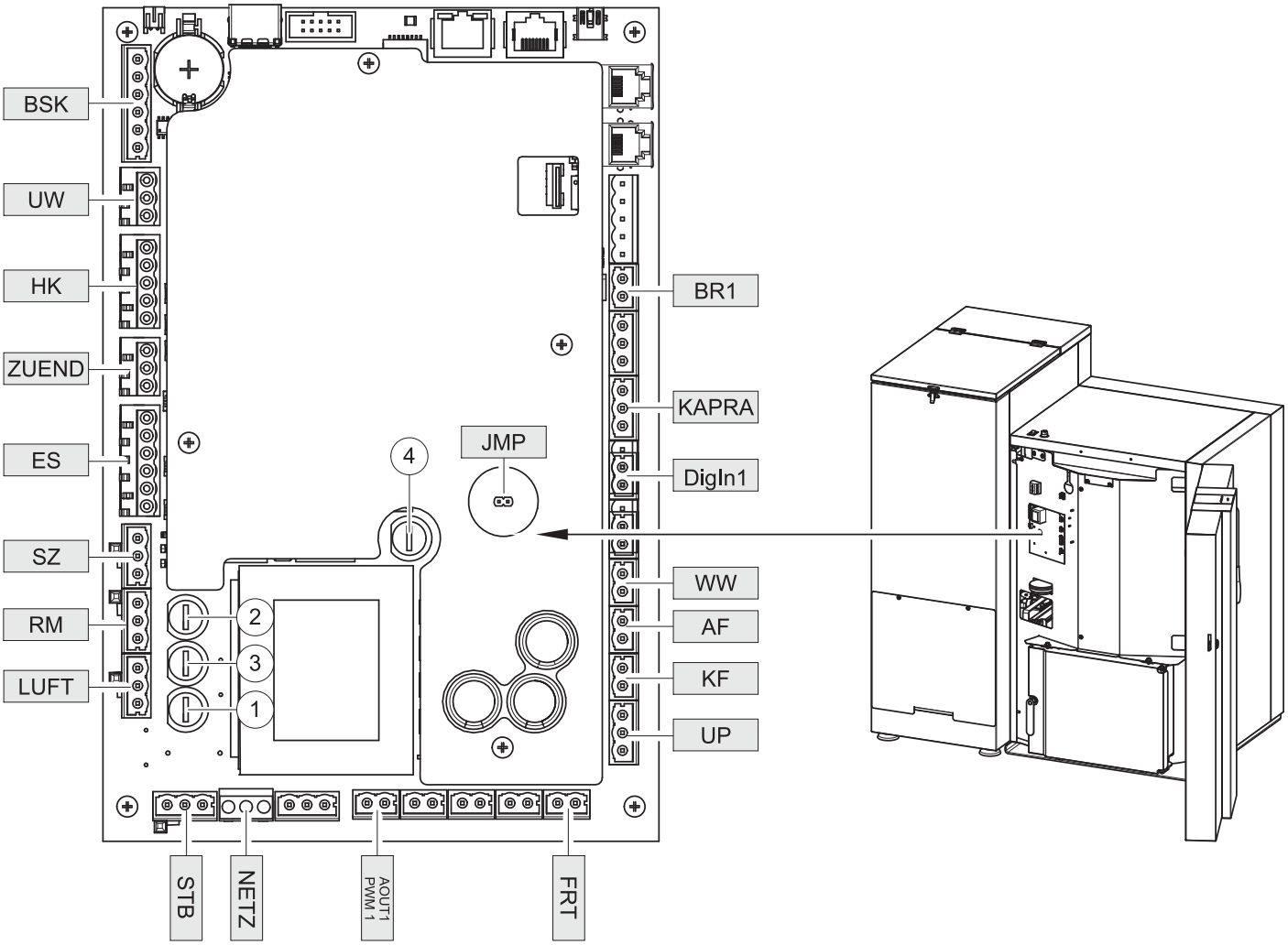


1	Feed
2	Return
3	Drain connection

9 The boiler controller

The boiler controller is located behind the front cover of the boiler.
It is used to control the combustion procedere and the fuel-feeding system.

The boiler controller is connected to the operating device by a bus-connection.
The operating device is located in the boiler door. Visualizing of measuring values and ajdustment of desired values and parameters are accomplished through through the operating device.



	Fuse type	secured outputs
1	F1: Fuse T 3,15A	LUFT, ES, ZUEND
2	F2: Fuse T 3,15A	UW, RM, SZ
3	F3: Fuse T 315mA	internal supply
4	F5: Fuse T 2A	KAPRA, DigIn1

NOTICE

Damage of property
If you change microfuses, ensure correct current rating

9.1 Plugs on the boiler control unit

All sensors and actuators are fully wired ready for connection. A plug-in connection is used for connecting to the boiler controller.
Always ensure that the labelling of the plug corresponds to that of the plug-in position.

Designation of plug-in position		**Voltage**	**Name of sensors, motors and pumps**
BSK	1 2 3 4 5 6	24 Volt	Flame return gate (Belimo)
UW	13 PE N	230 Volt	DHW pump/ Accumulator pump
HK	N PE 14	230 Volt	Only active if a sensor is connected to terminal 43/44.
ZUEND	N PE 22	230 Volt	Ignition
ES	1 2 3 N PE 6	230 Volt	Burner motor
SZ	17 PE N	230 Volt	Flue gas fan
RM	15 PE N	230 Volt	Motor boiler cleaning device — optional
LUFT	N PE 11	230 Volt	Burner fan
STB	17 PE 19	230 Volt	Safety temperature sensor
NETZ	L PE N	230 Volt	Power supply boiler control unit
AOUT PWM 1	1 2	230 Volt	PWM for speed controlled high-efficiency pump
FRT	13 12	24 Volt	Combustion chamber sensor
UP	4 3 2	24 Volt	Negative draft measuring
KF	9 8	24 Volt	Boiler sensor
AF	41 42	24 Volt	not used
WW	43 44	24 Volt	DHW sensor **Note:** (Only use for **controller version A**)
DigIn1	15 16 GN	24 Volt	Pilot switch for hopper
KAPRA	3 4 5	24 Volt	Capacitive sensor – burner
BR1	8 7	24 Volt	Burner contact for external heating controller
JMP	—	—	Jumper for speed controlled high-efficiency pump

9.2 Cable routing

Reroute cables after dismantling the casing or other system components.

DANGER

Risk of electric shock
Switch off the system before performing work on the boiler.

Note the following points to ensure the cables are routed securely:

Cables must not be routed:

- over moving parts,
- over hot parts,
- or over sharp edges.

Cables must be:

- routed in the cable ducts provided and
- through cable leadthroughs,
- tied together,
- and secured with cable ties at the points provided.

DANGER

Risk of electric shock
Check cables for damage.
Replace any cables that are damaged.

NOTICE

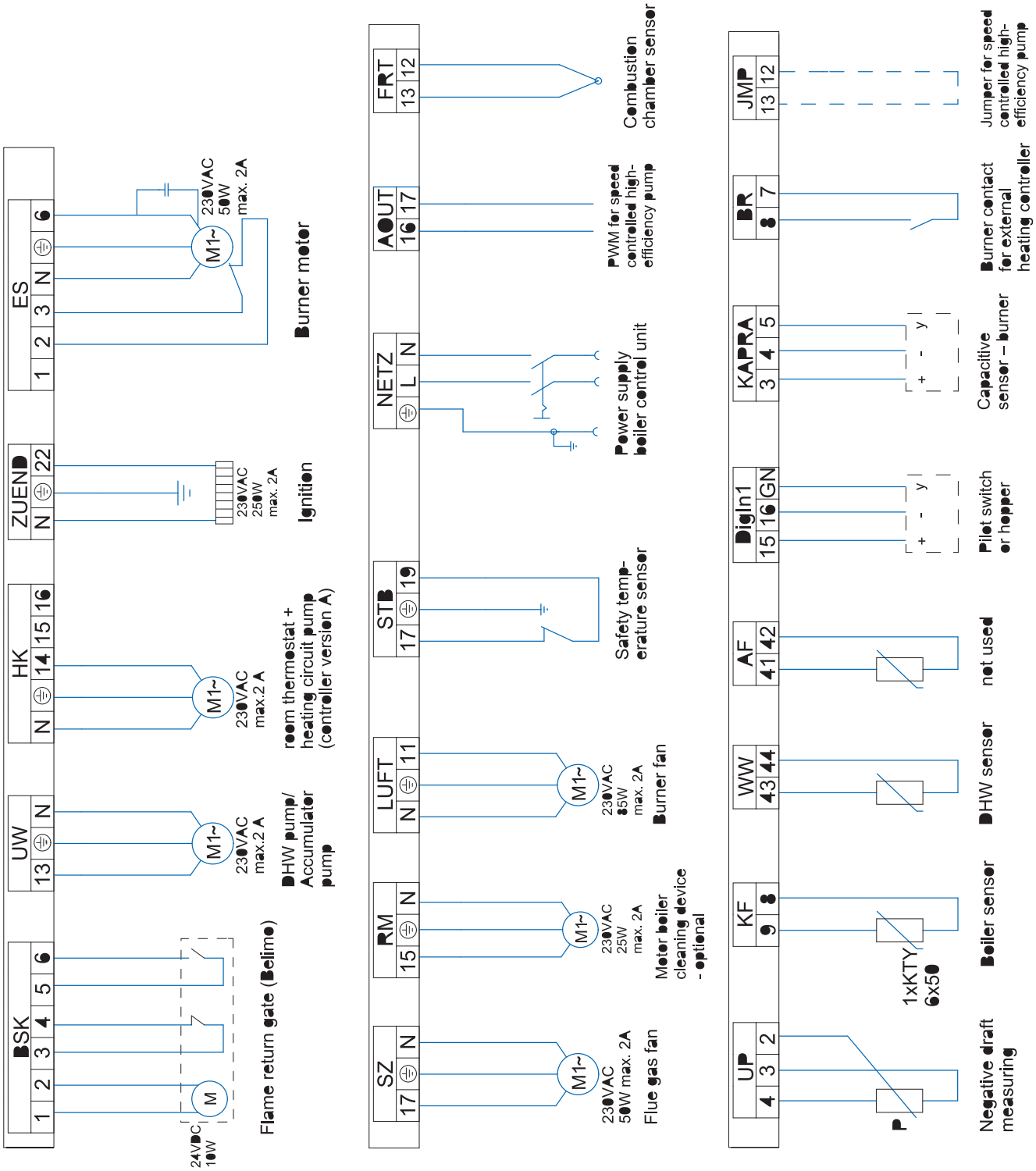
Damage to the boiler controller
Before fitting the casing components, make sure that all cables are connected to the correct points on the controller! Failure to do so can lead to damage to the controller, and such damage is not covered by warranty!

9.3 Wiring diagrams

The wiring diagrams for the boiler control unit provide detailed technical information for certified installers. Only certified installers or electricians under the direction of a certified installer may connect to the controller.

DANGER

Risk of electric shock
Only an authorised installer may connect the pellet boiler to the power supply.
Always disconnect / de-energize the power supply before working on the boiler.



10 Starting up for the first time

After bringing in the boiler, connecting up the hydraulics and power supply, the unit can be started up for the first time.

NOTICE

Density of the combustion chamber
To ensure a trouble-free operation, the density of the combustion chamber must be given.

Note:
The unit must be started up for the first time by an authorised Eco Engineering service technician.

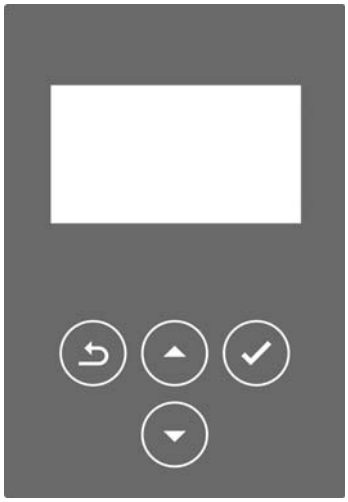
Note:
Use the checklist enclosed to document the start-up procedure.

NOTICE

Material Damage
The allowed operation temperature of the boiler controller is between 5 and 40°C.

11 Starting the pellet boiler

Navigation-icons



Icon-view	Description
	Use the up arrow to return to the previous menu screen.
	Use the down arrow to arrive at the next menu screen.
	When this symbol is displayed, the set value can be changed. When this function is selected, the value can be changed by pressing the arrow keys.
	When this function is selected, you leave the menu without saving the changed value.

Icons System status

Icon-view	Description
	Run down time
	Heating full power
	Container cover is open
	OFF
	Ignition
	Boiler cleaning **Note:** This message appears when the container cover has been open for longer than 20 seconds.
	Warning

12 Controller for heating circuits and DHW

In principle, 2 versions are available:

Version A:
- (max. 2) room thermostats are used for controlling the heating circuits.
- The boiler controller features a time program for controlling DHW heating. The required DHW sensor is included in the scope of supply.

Version B:
- An external controller is used for controlling the heating circuits and DHW heating.

12.1 Version A

A control function is integrated into the boiler controller, which enables a maximum of 2 heating circuits without mixer (radiators) to be controlled using a room thermostat.
Furthermore, a control function for domestic hot water is integrated into the boiler controller.

This control function is activated when a DHW sensor (included in scope of supply) is connected to terminal 43/44.

Note:
In this case, the input at terminal 7/8 can **NO LONGER** be used as the "burner contact" for an external controller.

Heating circuit control by means of room thermostat:

The burner starts when a room thermostat is connected.
When the boiler switch-off temperature of 76° C is reached, the boiler switches to standby mode and the heating circuit pump continues to be activated.
When the actual boiler temperature falls to 10° C below the boiler switch-off temperature, the burner restarts.

If both room thermostats are open (room temperature has been reached), the boiler switches to standby mode.
The burner is shut down in stages, whereby the boiler temperature continues to rise.
Consequently, the heating circuit pumps continue to be activated until the boiler temperature falls to 11° C below the boiler switch-off temperature.
In order to utilise the amount of heat present in the boiler, the hot water pump is activated automatically.

However, this only occurs if the actual DHW temperature is below the set DHW temperature + 5° C.

NOTICE

It is essential that the **room thermostat** is connected to **terminal 14**! Please observe the wiring diagram.

NOTICE

In this case, a DHW sensor must also be connected to terminal 43/44.

DHW control by time program:

A time program for DHW heating can be set on the operating device.
DHW heating is started according to this time program.
If the actual DHW temperature is below the set temperature minus hysteresis (adjustable), the burner is started.
The hot water pump (terminal 13/N) is activated if the boiler temperature is above the pump release temperature (60 °C). The pump is switched off when the DHW temperature reaches the set DHW temperature.

If there is no burner demand (room thermostat open) at this time, the boiler switches to standby mode.

DHW control by time switch or manual switch:

Instead of controlling DHW heating with a time program, it is also possible to use a time switch or manual switch.
For this purpose, a switching contact (time switch or manual switch) can be connected to terminal 7/8 (24-volt).

If the switching contact at terminal 7/8 is closed, DHW heating is started.

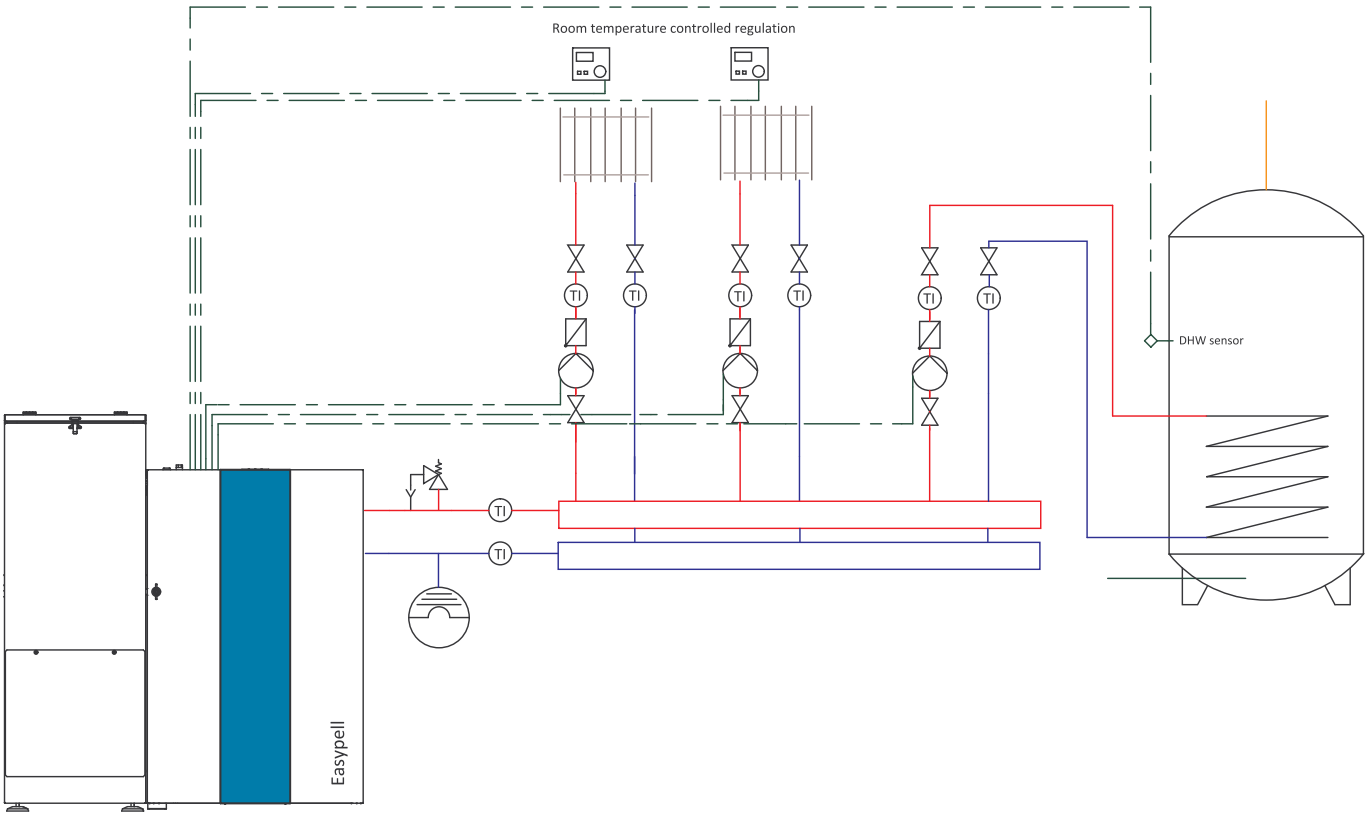
NOTICE

A DHW sensor must be connected to terminal 43/44!

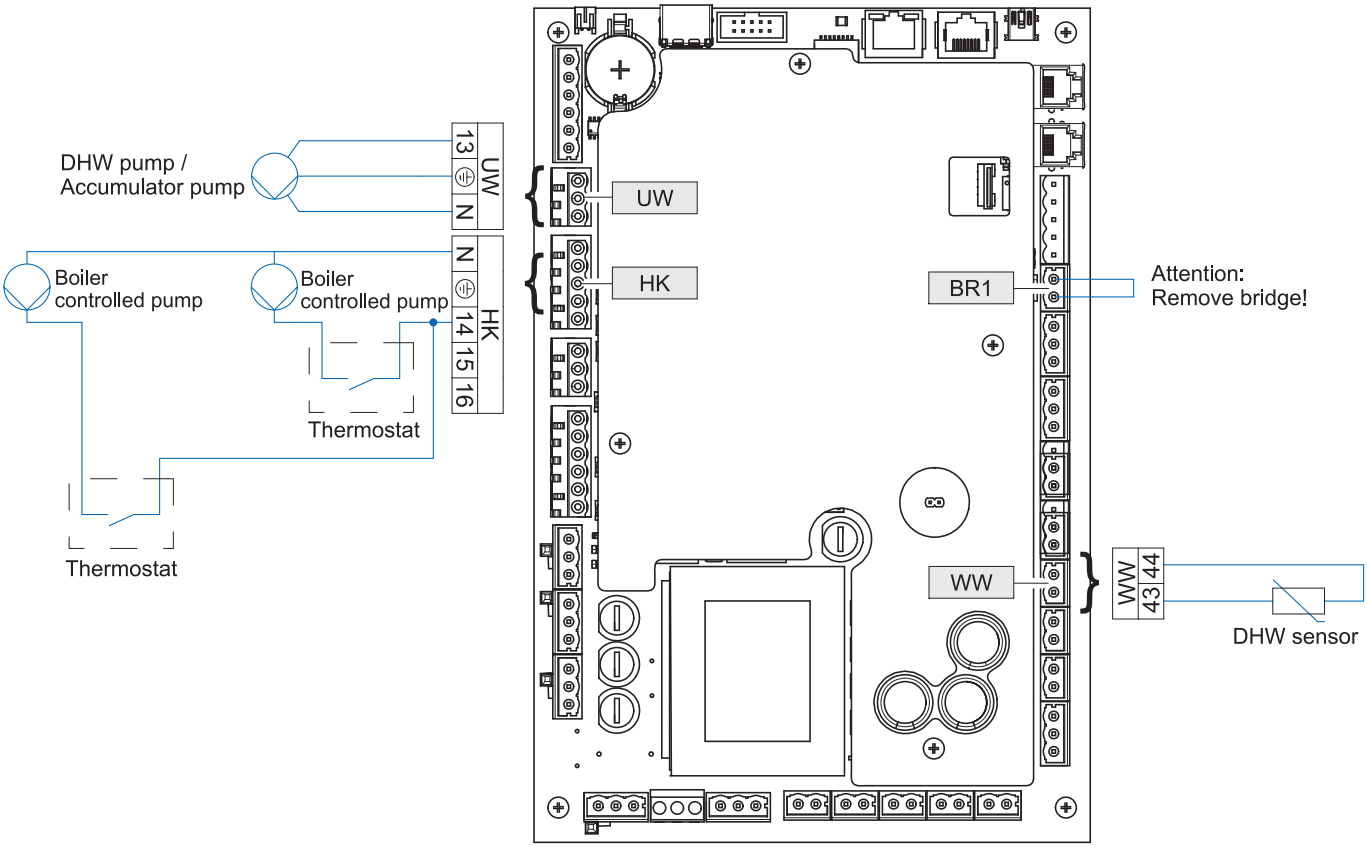
NOTICE

If a time switch or manual switch is used, it is advisable NOT to program any domestic hot water heating periods.

Hydraulic diagram version A:



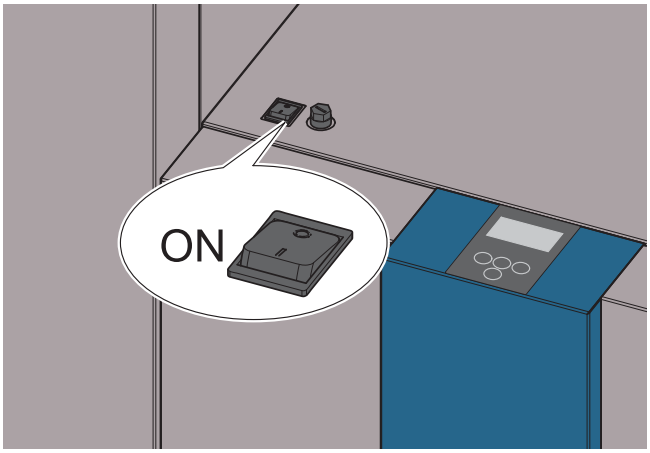
Wiring diagram version A:



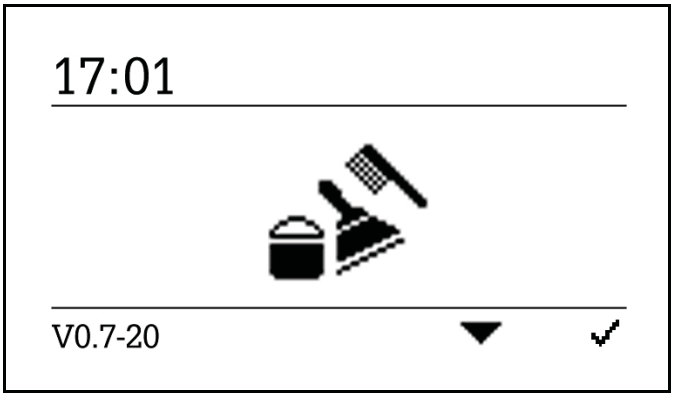
Note:
The total line length of the heating circuit pumps must not exceed 100 m!

12.1.1 Commissioning controller version A

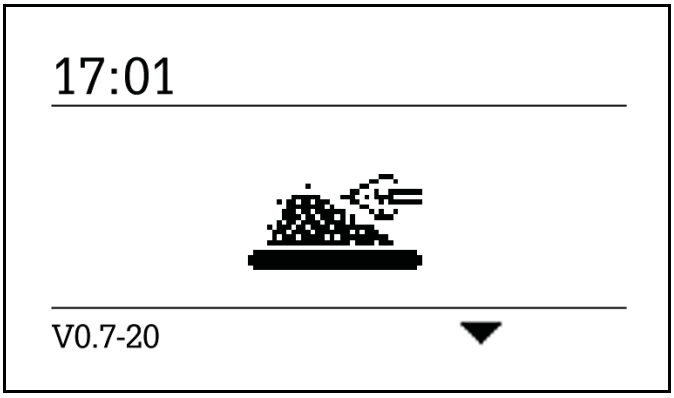
A DHW sensor must be connected to terminal 43/44!



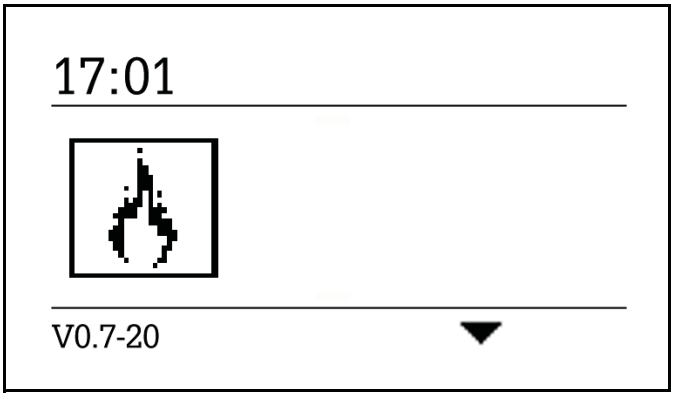
After switching on, the boiler starts (after approx. 10 seconds).
The fire protection device is opened.



This symbol appears on the display while the fire protection device is being opened (approx. 2 minutes).

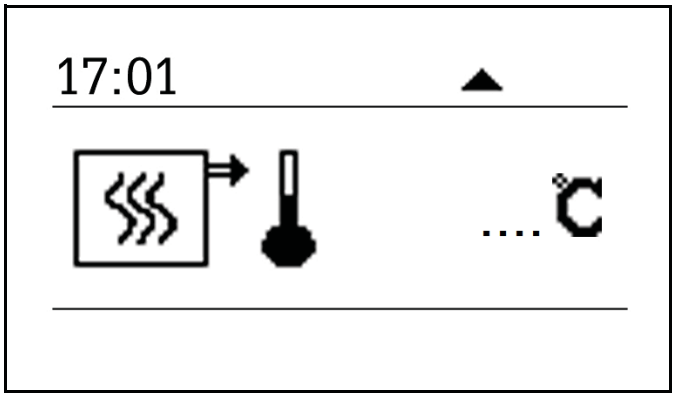


After the fire protection device has been opened, the ignition process starts and the symbol for ignition is displayed.



On completion of the ignition process (can last up to 15 minutes), the symbol for heating at full power appears.
The boiler is now heating at full power.

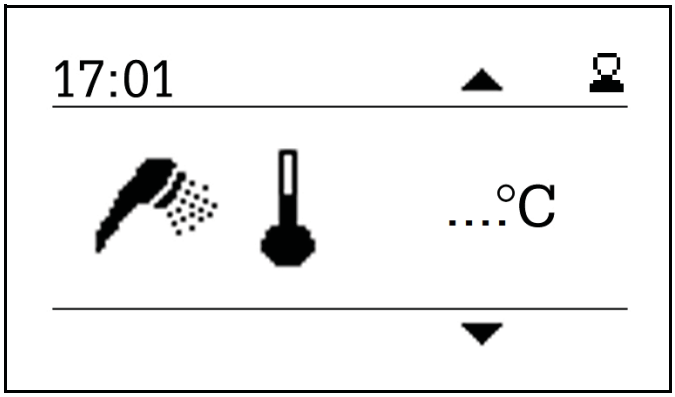
– button



The current boiler temperature is displayed.

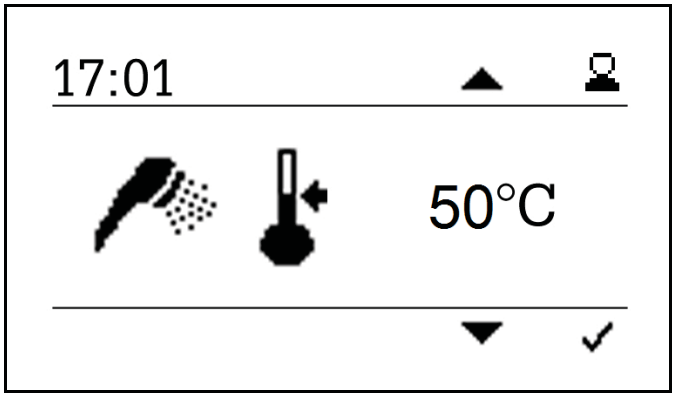
– button

12.1.2 Selecting the set DHW temperature



The current DHW temperature is displayed.

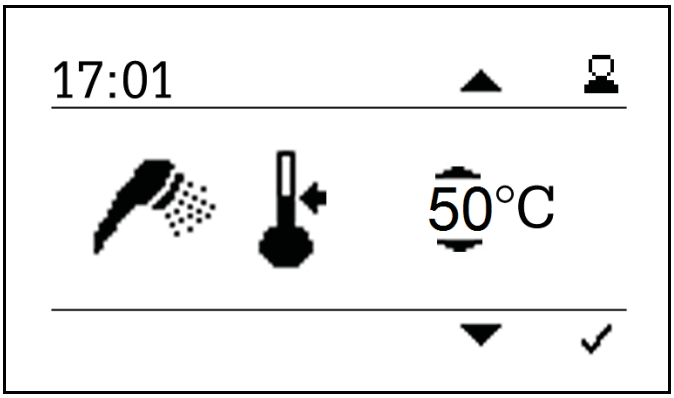
– button



The set DHW temperature is displayed.
Factory setting = 50° C

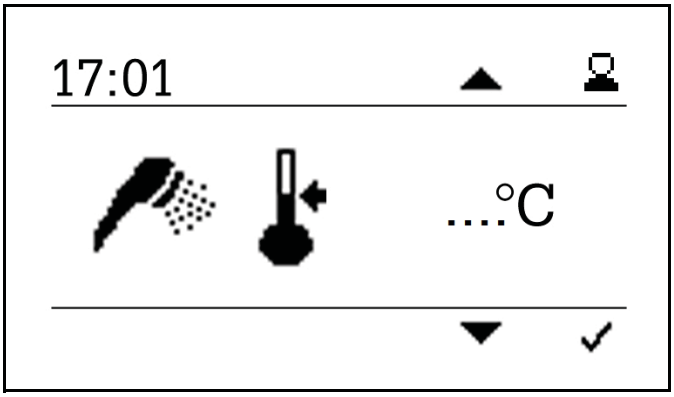
The set DHW temperature can be changed as follows:

– button



The value can be raised or lowered by pressing the keys .

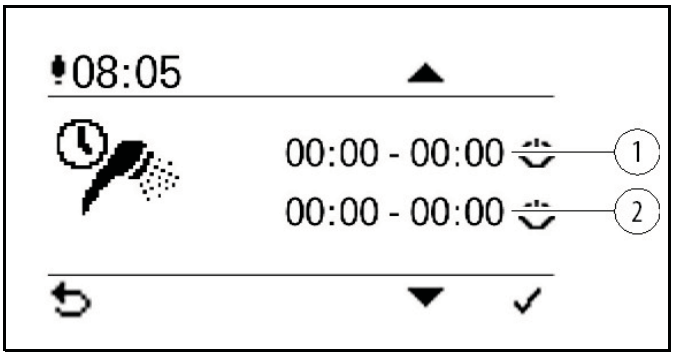
– button = save value



The stored value is displayed.

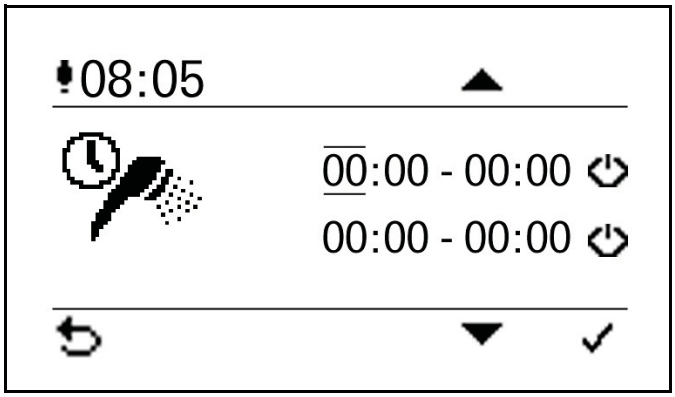
– button

12.1.3 Setting the time program for DHW heating



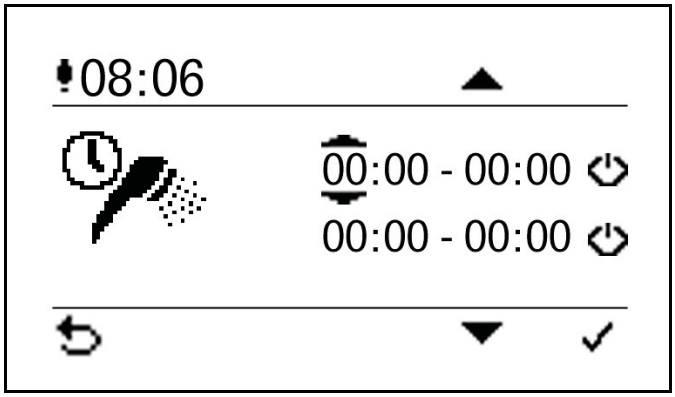
1. Heating period 1
2. Heating period 2

– button



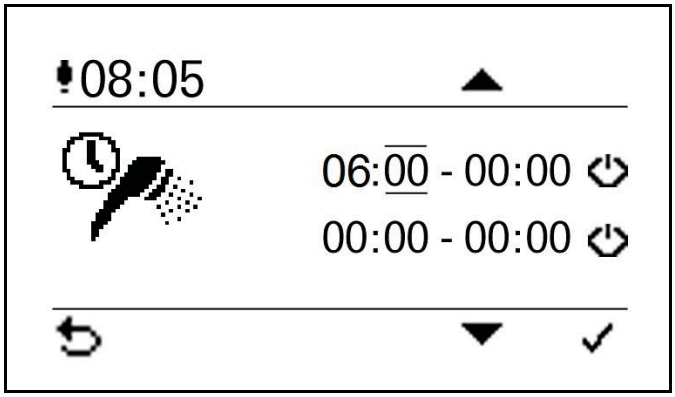
Cursor at the hour.

– button



The value can be set by pressing the keys / .

– button = save value

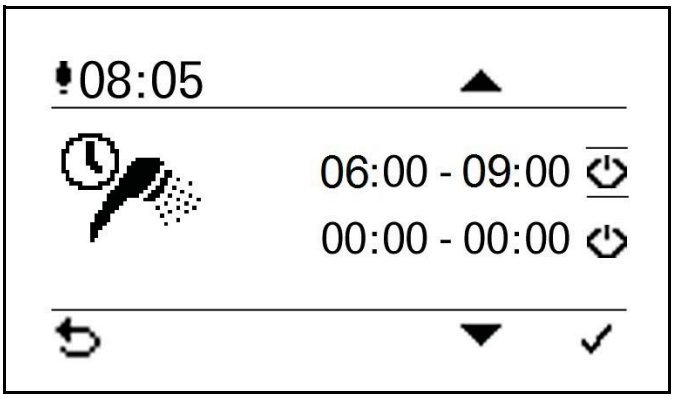


Cursor jumps to the minute.

Other values (minutes and hours) are set as described above.

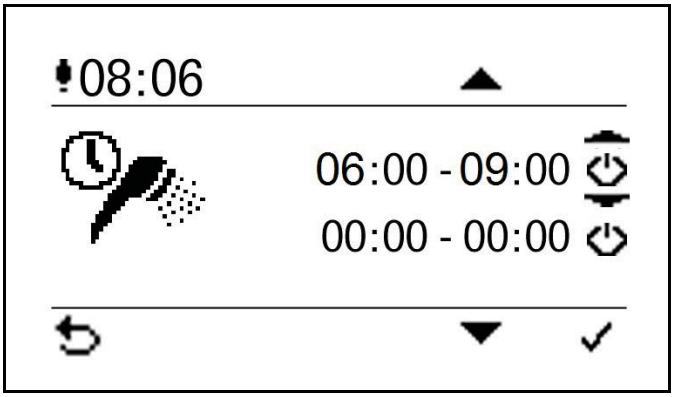
Note:
The set heating period still needs to be activated.

– button

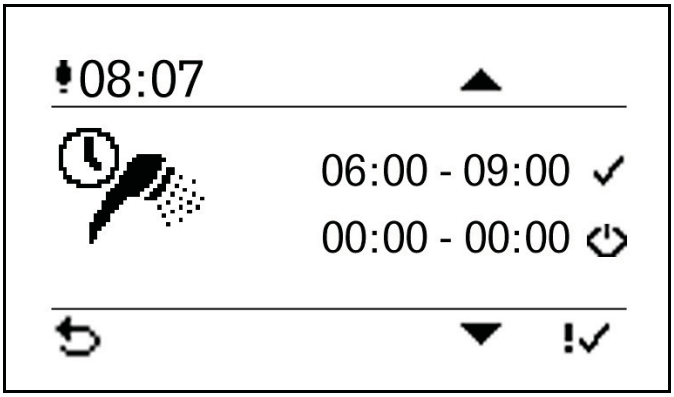


Cursor at the symbol .

– button



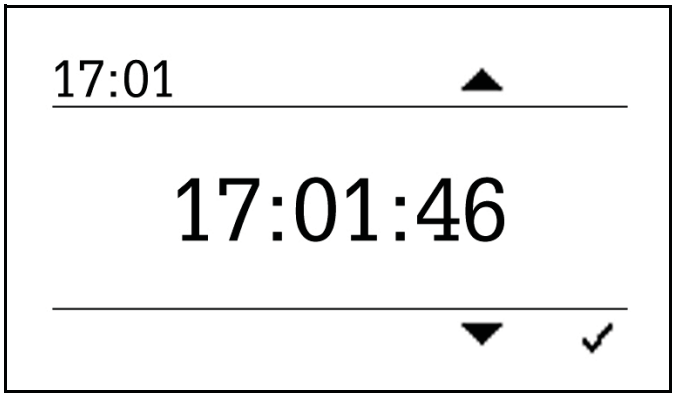
button = Activate the set heating periods.



The symbol ✓ shows that the heating periods have been activated and saved.

– button

12.1.4 Setting the time

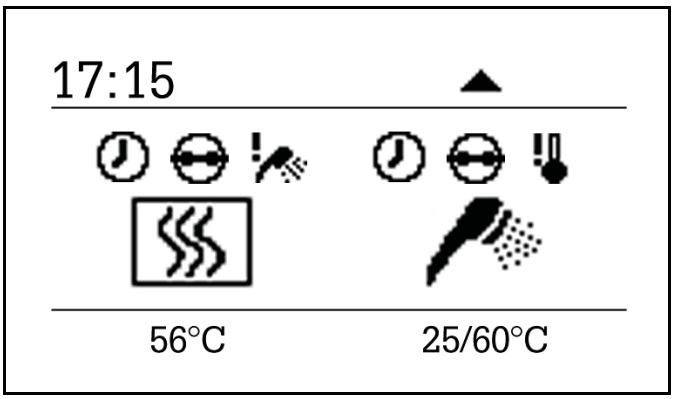


The current time is displayed.

Note:
The time is set in the same way as the heating periods!

– button

12.1.5 Status display



The current status is displayed.
No settings can be entered.

This display is for information only.

Pressing the button repeatedly returns you to the start screen.

Status display symbols:

Display	Description
	DHW priority active (heating circuit demand is subordinate).
	Pump output active.
	Minimum boiler temperature (pump release) has not been reached.
	Time program active.
	Burner demand via burner contact / thermostat.
	Warning

12.2 Version B

Heating circuits and domestic hot water are controlled by an external controller.

The boiler controller features a "burner contact" for this purpose at terminal 7/8 (24V).

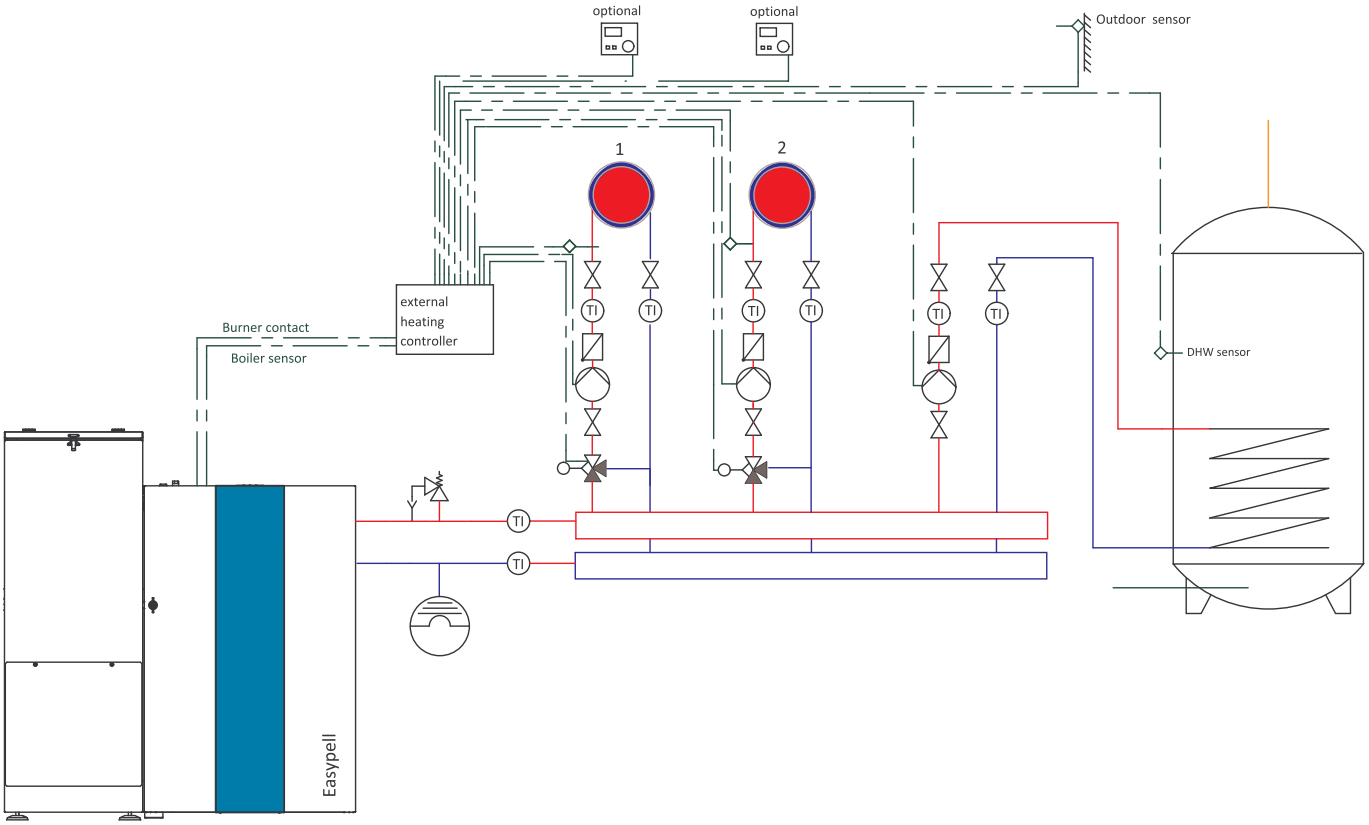
If this burner contact is closed, the burner starts.
The boiler switches to standby mode when the switch-off temperature is reached.
The boiler switch-off temperature is set at the factory to 76° C.
When the actual boiler temperature falls to 10 °C below the boiler switch-off temperature, the burner restarts.

NOTICE

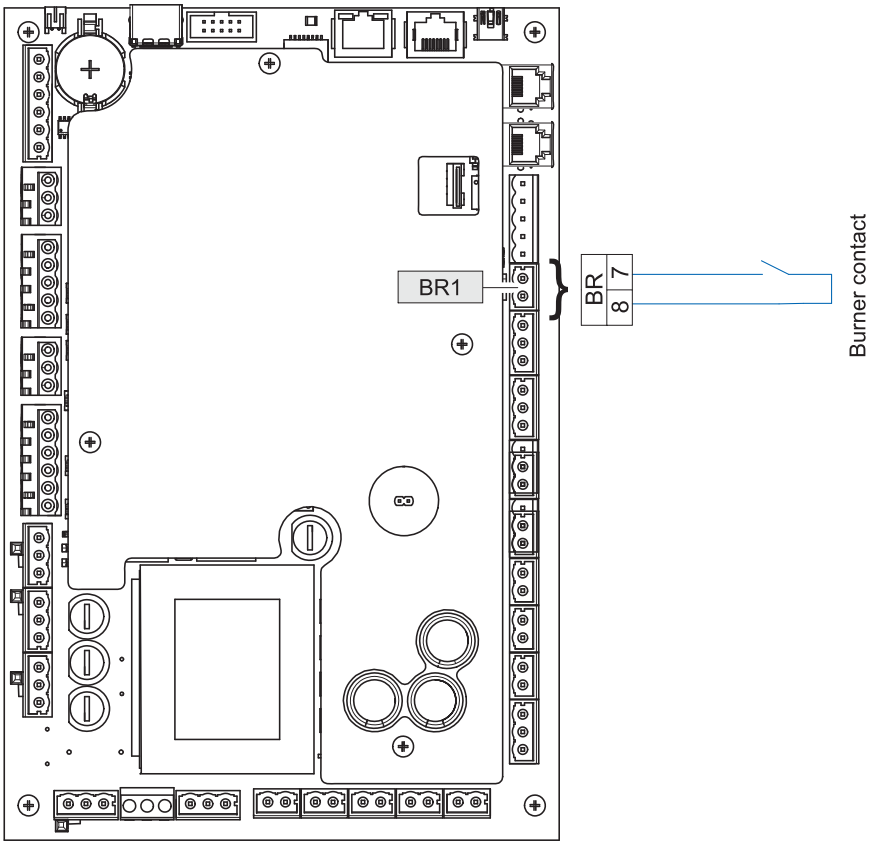
It must be ensured that both the heating circuit pumps and the hot water pump are only switched on when an actual boiler temperature of 60 °C has been reached. This prevents the formation of condensate in the combustion chamber.

Note:
Non-compliance with this requirement leads to guarantee and warranty forfeiture!

Hydraulic diagram version B:

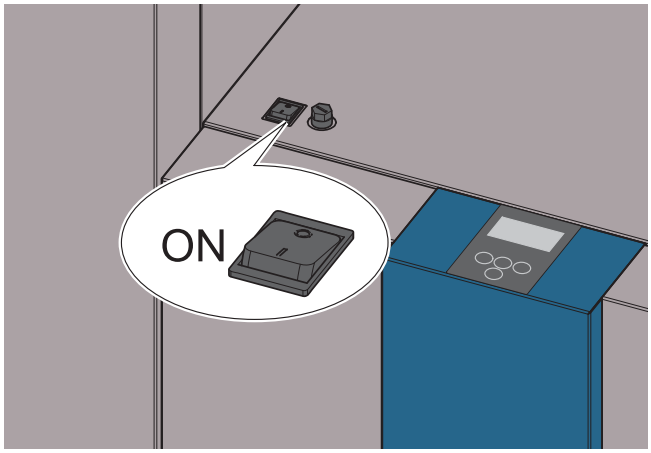


Wiring diagram version B:

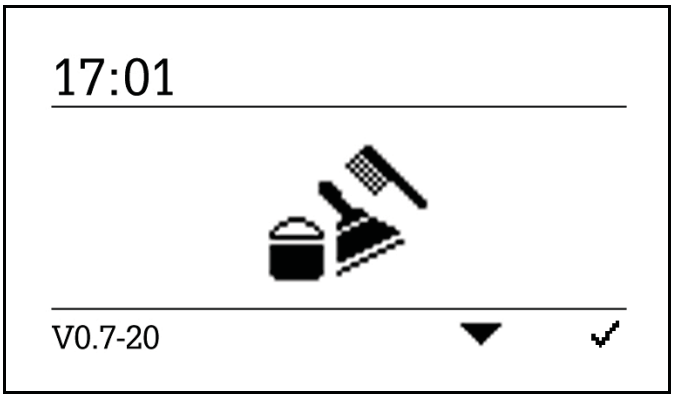


Note:
The total line length of the heating circuit pumps must not exceed 100 m!

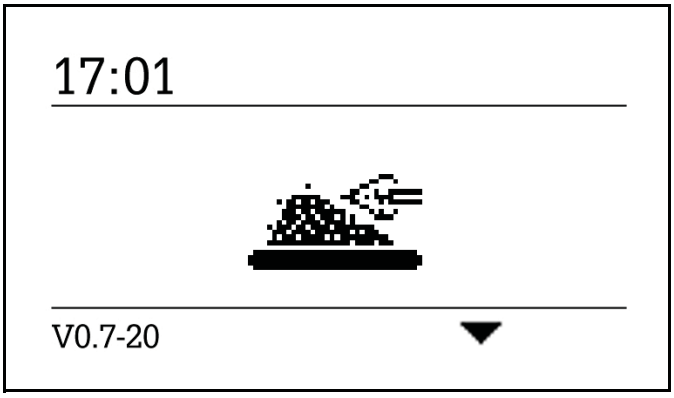
12.2.1 Commissioning controller version B



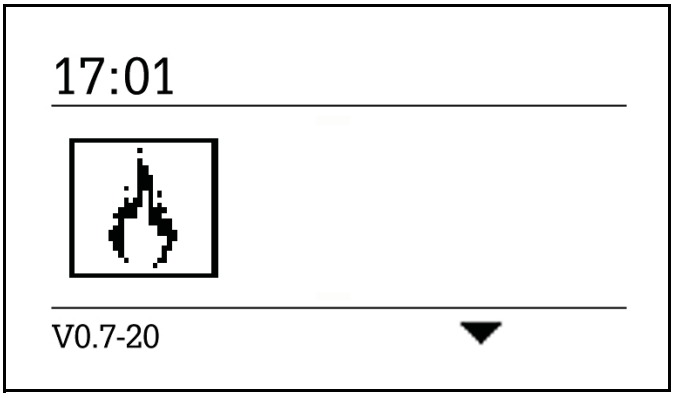
After switching on, the boiler starts (after approx. 10 seconds).
The fire protection device is opened.



This symbol appears on the display while the fire protection device is being opened (approx. 2 minutes).

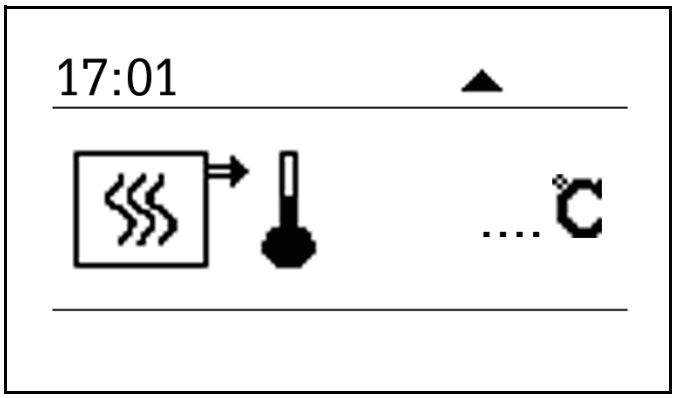


After the fire protection device has been opened, the ignition process starts and the symbol for ignition is displayed.



On completion of the ignition process (can last up to 15 minutes), the symbol for heating at full power appears.
The boiler is now heating at full power.

– button



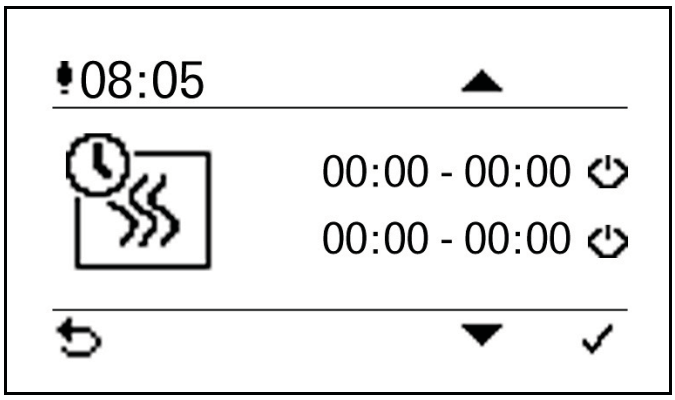
The current boiler temperature is displayed.

– button

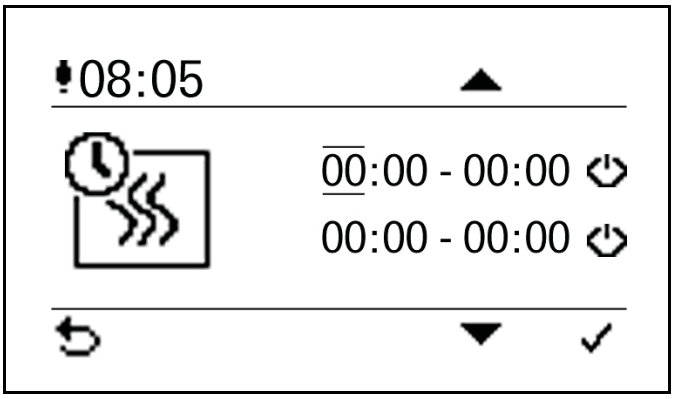
12.2.2 Setting the boiler heating period

If heating periods are programmed, the boiler runs at the set times.
During these periods, burner requests from the external controller (terminal 7/8) are ignored.
Outside the programmed heating periods, burner demand from the external controller (terminal 7/8) is active again.

Note:
Programming of heating periods is NOT advisable if an external controller is used!

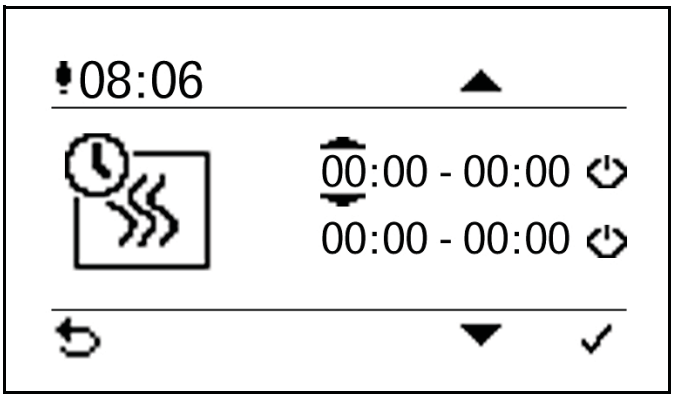


– button



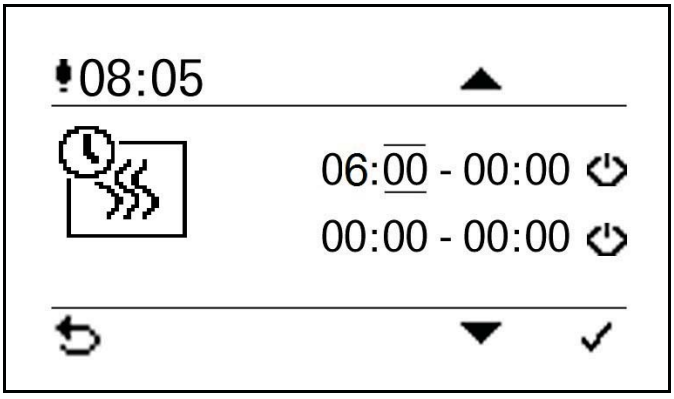
Cursor at the hour.

– button



The value can be set by pressing the keys / .

– button = save value

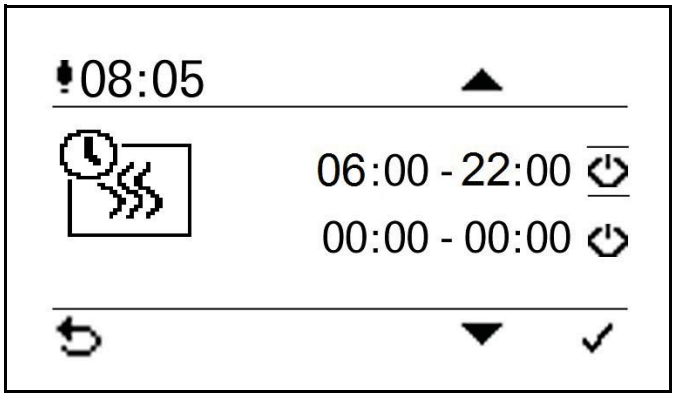


Cursor jumps to the minute.

Other values (minutes and hours) are set as described above.

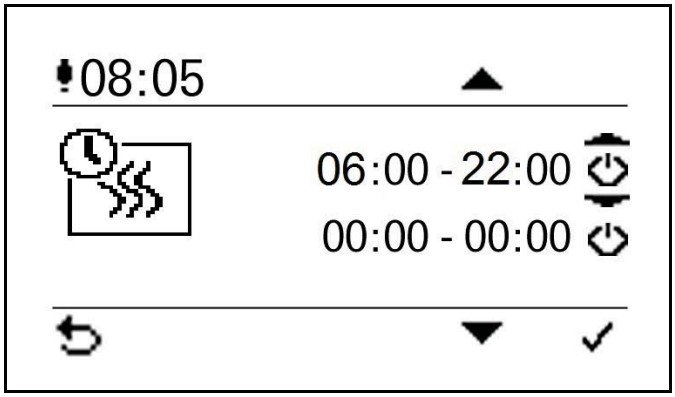
Note:
The set heating period still needs to be activated.

– button

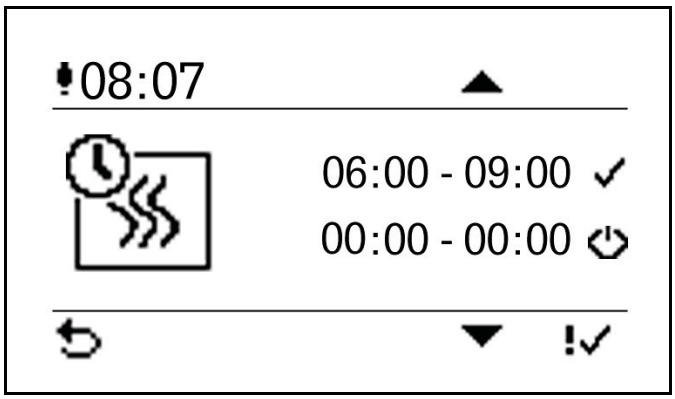


Cursor at the symbol .

– button



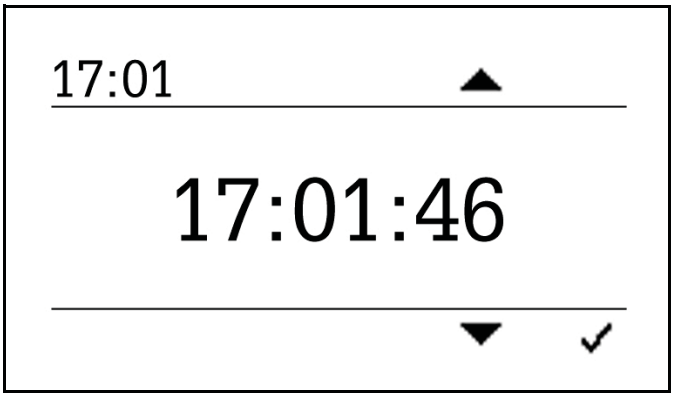
button = Activate the set heating periods.



The symbol ✓ shows that the heating periods have been activated and saved.

– button

12.2.3 Setting the time

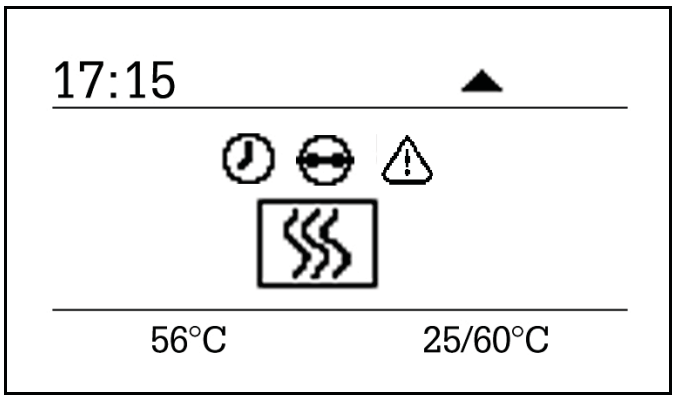


The current time is displayed.

Note:
The time is set in the same way as the heating periods!

– button

12.2.4 Status display



The current status is displayed.
No settings can be entered.

This display is for information only.

Pressing the button repeatedly returns you to the start screen.

Status display symbols:

Display	Description
	Pump output active.
	Minimum boiler temperature (pump release) has not been reached.
	Time program active.
	Burner demand via burner contact / thermostat.
	Warning

13 Malfunctions

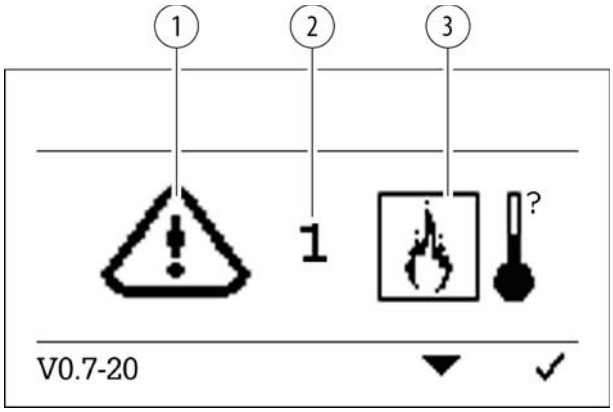
13.1 Malfunctions - what to do

Follow the sequence described for handling malfunctions.

- The heating system switches off automatically if a malfunction occurs.
- The control unit display shows a malfunction alarm text.
- You have to rectify the cause of the malfunction.
- After eliminating the underlying causes, you can restart the boiler.

13.2 Fault texts

The fault text displayed on the screen provides information on the type and status of the malfunction as well as help for troubleshooting.



1. Warning symbol
2. Error code
3. Error symbol

Note:
The system restarts automatically when the cause has been eliminated.

Overview of malfunction alarm texts:

Display:			
Error code:	0		
Description:	Boiler sensor fracture, measuring circuit from boiler sensor is open		
Cause and Remedy:	sensor not connected	►	connect sensor at input
	sensor defect	►	measure sensor (approx. 2kΩ at 25° C) replace if required
	sensor cable defect	►	replace sensor
	sensor temperature too high	►	sensor temperature above measuring range (1100° C)
Description:	Boiler sensor short circuit, measuring circuit from boiler sensor is shorted out		
Cause and Remedy:	sensor defect	►	measure sensor (approx. 2kΩ at 25° C) replace if required
	sensor cable defect	►	replace sensor
	sensor temperature too low	►	sensor temperature below measuring range (-10° C)

Display:			
Error code:	1, 2, 3		
Description:	Combustion chamber sensor fracture, measuring circuit from combustion chamber sensor is open		
Cause and Remedy:	sensor not connected	►	connect sensor at input
	sensor defect	►	Measure sensor (approx. 5mV at 125° C) replace if required
	sensor cable defect	►	replace sensor
	sensor temperature too high	►	sensor temperature above measuring range (1100° C)
Description:	Combustion chamber sensor short-circuit, measuring circuit from combustion chamber sensor is shorted out		
Cause and Remedy:	sensor defect	►	Measure sensor (approx. 5mV at 125° C) replace if required
	sensor cable defect	►	replace sensor
	sensor temperature too low	►	sensor temperature below measuring range (-10° C)
	sensor polarity incorrect	►	exchange + and – connections

Display:			
Error code:	4		
Description:	Negative draft input open, measuring circuit from negative draft measurement open		
Cause and Remedy:	signal incorrect	►	check polarity and signal (0-10V)
	signal cable defect	►	replace sensor
	signal too low	►	signal below 0V
	combustion chamber leak	►	check closure of boiler door
Error code:	5		
Description:	Negative draft input short-circuit, measuring circuit from negative draft measurement is shorted out		
Cause and Remedy:	signal incorrect	►	check polarity and signal (0-10V)
	signal cable defect	►	replace sensor
	signal too high	►	signal above 10V
Error code:	6		
Description:	Negative draft pressure in boiler is not achieved		
Cause and Remedy:	negative draft tube disconnected	►	connect up negative draft tube

	negative draft does not change	►	Check negative draft tube for leaks. Check flue gas tube for blockage.
	Negative draft pressure too low	►	Close boiler door, check tube to negative draft sensor, check whether boiler flue gas outlet is clear, check whether condensation heat exchanger is clear. Make sure flue gas fan is running.

Display:			
Error code:	7		
Description:	Safety temperature limiter has tripped		
Cause and Remedy:	safety temperature limiter unplugged	►	connect up safety temperature limiter and check cable connections
	safety temperature limiter has tripped	►	check boiler controller
	safety temperature limiter defect	►	allow boiler to cool and reset alarm

Display:			
Error code:	8, 9		
Description:	Flue gas minimum temperature not reached during ignition phase		
Cause and Remedy:	no pellets available	►	fill up with pellets
	ignition electrode defect	►	check ignition electrode (approx. 200Ω) replace if required
	ignition nozzle blocked	►	clean burner plate and ignition tube
	flue gas sensor contaminated	►	clean flue gas sensor and flue gas tube
	flue gas sensor is not in flue gas tube	►	insert flue gas sensor into flue gas tube

Display:			
Error code:	10		
Description:	Flame return gate open fault.		
Cause and Remedy:	flame return gate unplugged	►	Connect up flame return gate and check cable connections
	Flame return gate does not reach OPEN limit switch	►	check ball valve to see if it is jammed
	no signal although open	►	check cables and flame return gate
Error code:	11		

Description:	Flame return gate closed fault.		
Cause and Remedy:	flame return gate unplugged	►	Connect up flame return gate and check cable connections
	Flame return gate does not reach CLOSE limit switch	►	check whether ball valve is jammed, check ball valve throughway to see if foreign objects are preventing it from closing
	no signal although closed	►	check cables and flame return gate
Error code:	12		
Description:	Both flame return gate limit switches are closed at the same time		
Cause and Remedy:	both limit switches activated	►	check flame return gate, check cables, check connectors

Display:			
Error code:	14		
Description:	Container cover open		
Cause and Remedy:	Cover open	►	close cover
	End-switch defect	►	replace end-switch

Display:			
Error code:	15		
Description:	DHW sensor fracture, measuring circuit from DHW sensor is open		
Cause and Remedy:	sensor not connected	►	connect sensor at input
	sensor defect	►	measure sensor (approx. 2kΩ at 25° C) replace if required
	sensor cable defect	►	replace sensor
	sensor temperature too high	►	sensor temperature above measuring range (1100° C)
Description:	DHW sensor short circuit, measuring circuit from boiler sensor is shorted out		
Cause and Remedy:	sensor defect	►	measure sensor (approx. 2kΩ at 25° C) replace if required
	sensor cable defect	►	replace sensor
	sensor temperature too low	►	sensor temperature below measuring range (-10° C)

14 Appendix

14.1 Checklist for checking the heating system

The checklist is intended to help authorised specialists perform and document a comprehensive check on the heating system.

Name and adress of the customer	**Heating device**
Name:	Type of boiler:
Street:	Rated power:
Place:	Year of build:
Name and adress of the seller	Manufacturer's serial number:
Name:	Type of heating controller:
Street:	Type of accumulator:
Place:	Solar device:

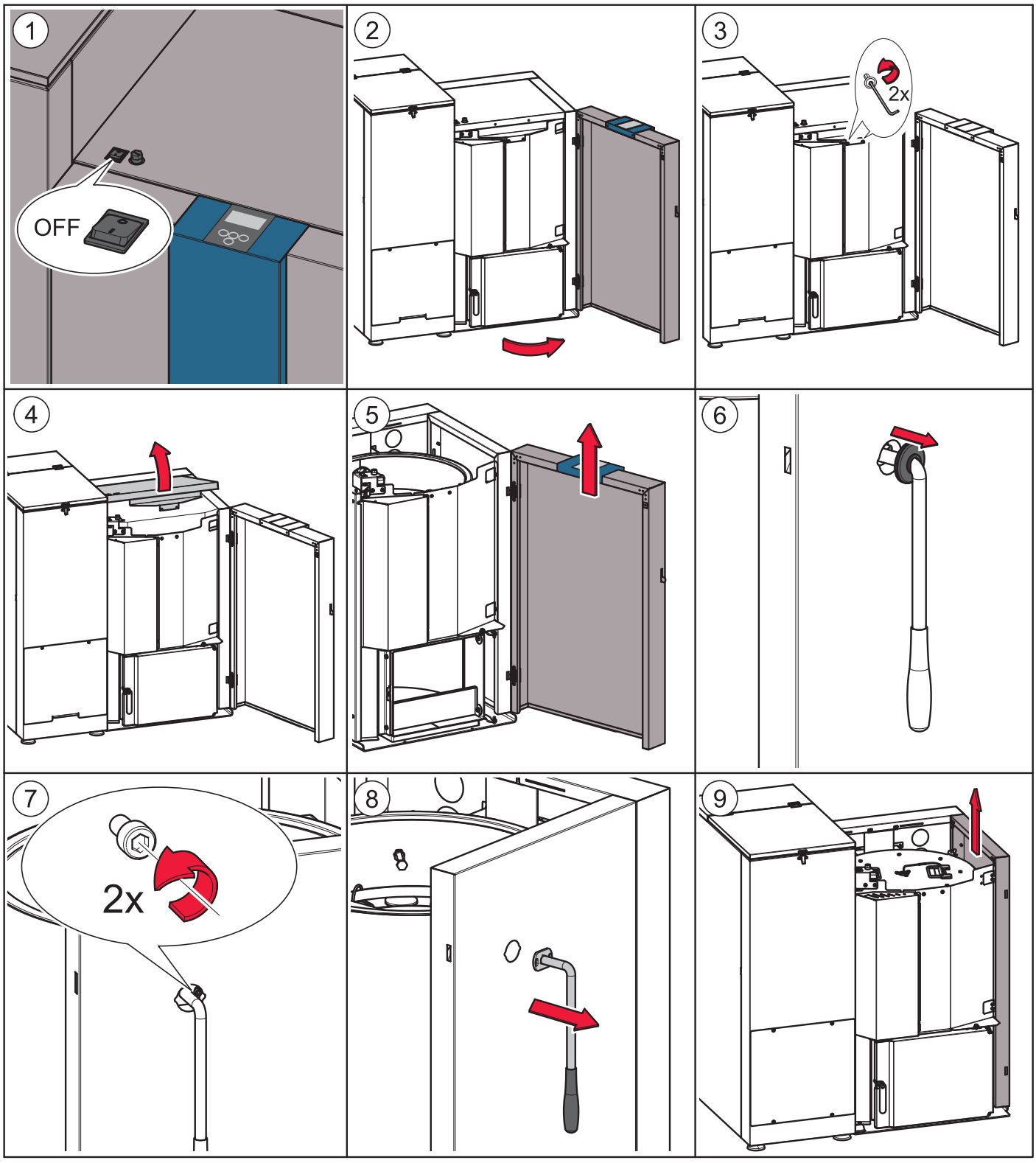
NOTICE

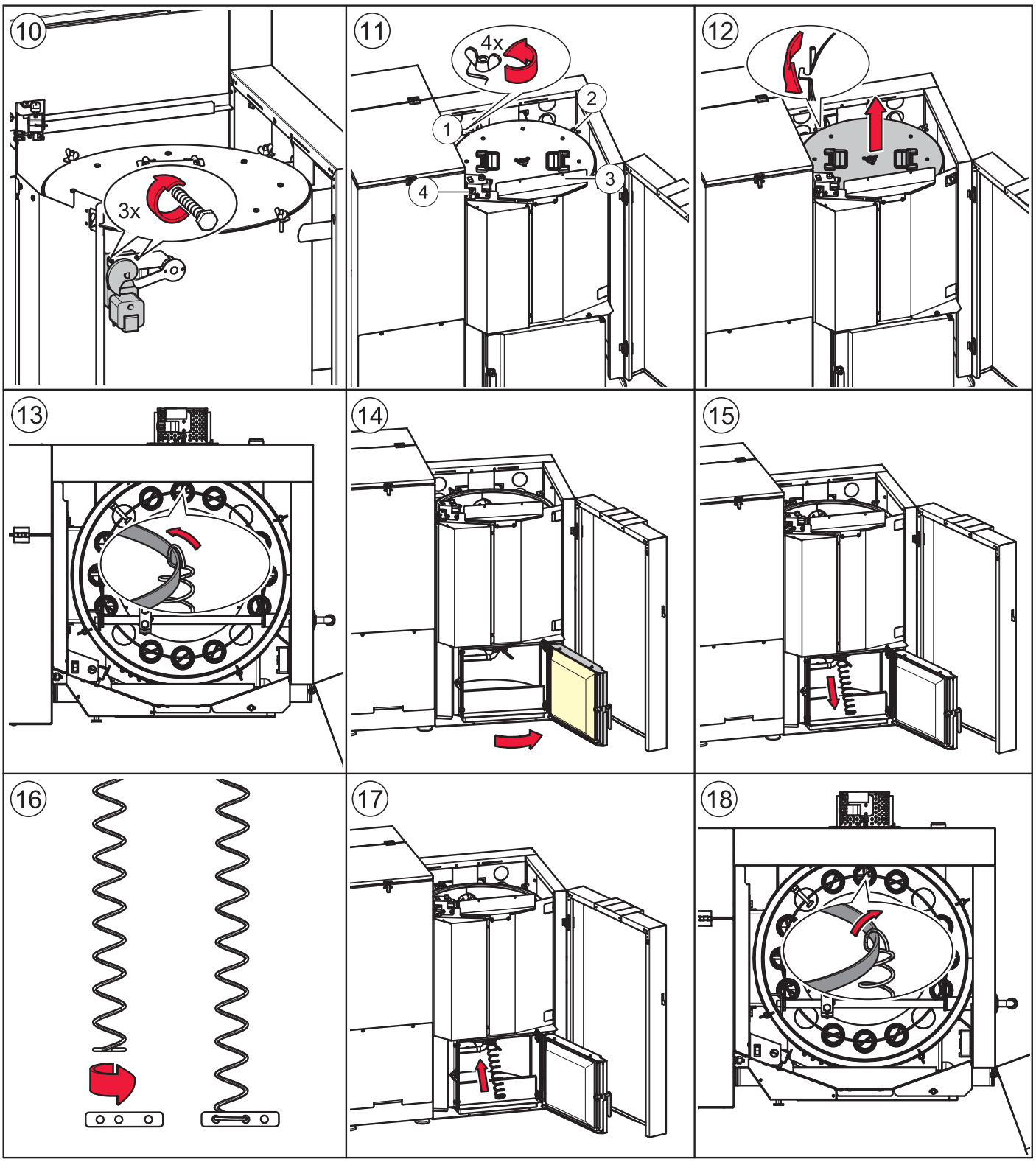
Damage to property
Use the checklist to check the heating system before starting up for the first time.

CHECKLIST		Yes	Comment
Pellet boiler			
Burner plate	Is the screw fixing the burner plate, tightened?		
Flame tube	Is the flame tube placed correctly?		
Combustion chamber cover	Are the adjusting screws for the increasing of the flue gas temperature adjusted correctly?		
Flue gas connection	Is the connection line insulatet?		
	Is a chimney draft regulator, barometric damper implemented?		
Airation/boiler room	Exists the required aeration opening?		
Nameplate	Is the nameplate placed on the boiler?		
Electric installation and regulation			
Power supply	Check the electrical connection		
	Check the dimensions of the fuses.		
Boiler sensor	Securing location and connection		
Hydraulic Connection			
Circuit pumps	Check the switch on temperature (min. 60°C)		
Boiler connection	Is the pellet boiler correctly connected (flow and return)?		
	Is the hydraulic system deaerated?		
	Is the system filled up with water? Check the pressure.		
Safety systems			

CHECKLIST		Yes	Comment
Safety temp. sensor	Check the installation and explain the function, securing location and connection		
Emergency stop switch	Exists an emergency stop switch?		
Fire extinguisher	Exists a fire extinguisher?		
Instruction			
Heating-up	Explanation of functions, malfunctions and maintenance		
Operating manual	Explanation of the operating and maintenance regulations		
Maintenance contract	Notice to the legal regulations		

14.2 Retrofit motor cleaning device




10
3x
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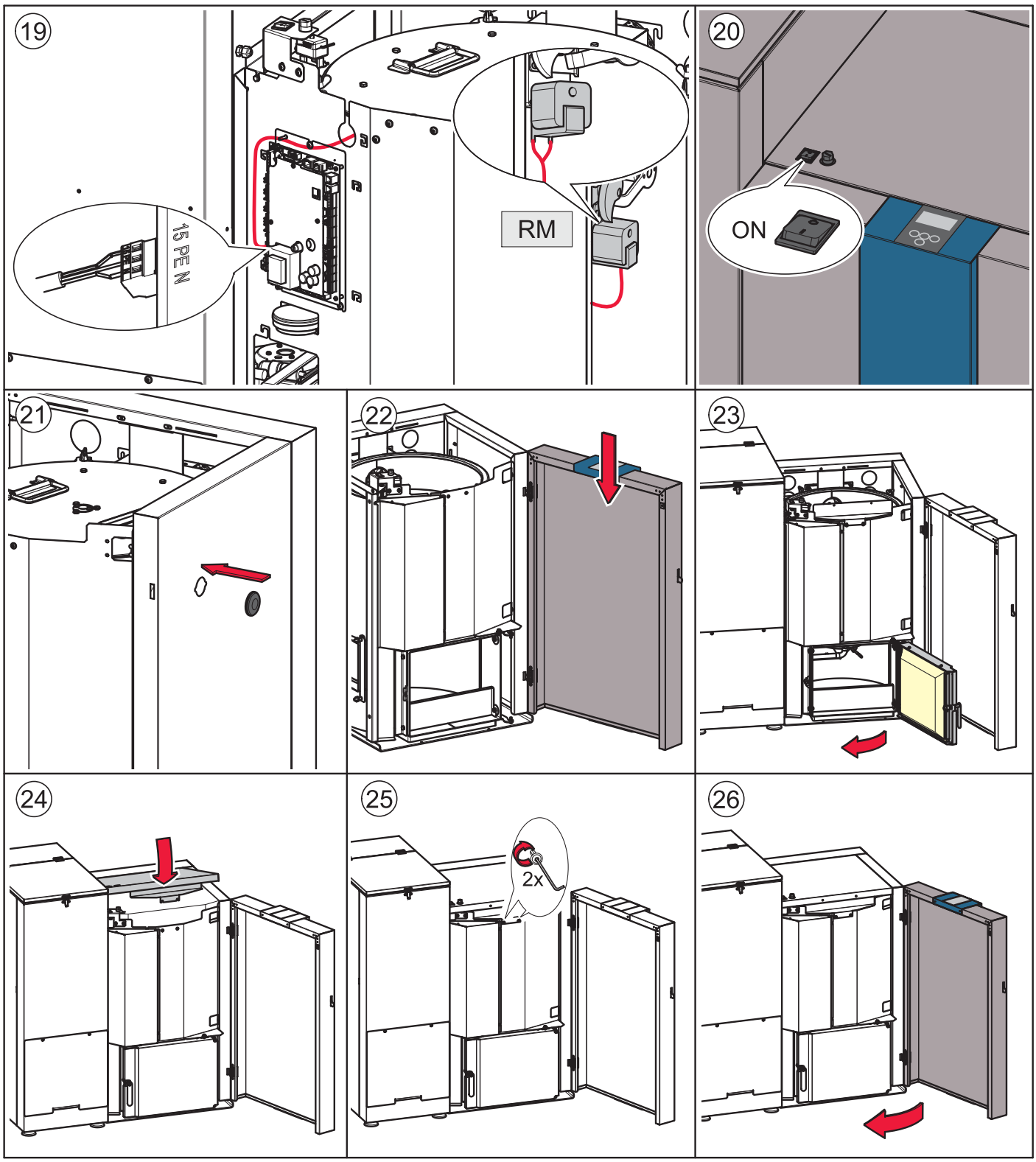
19
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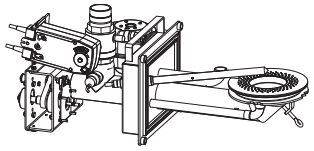
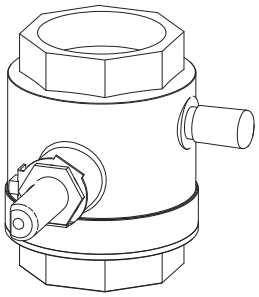
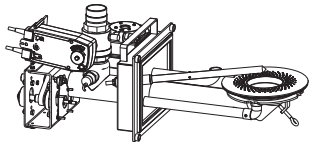
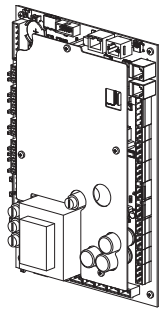
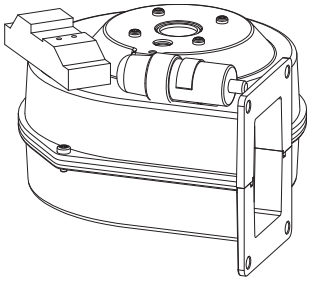
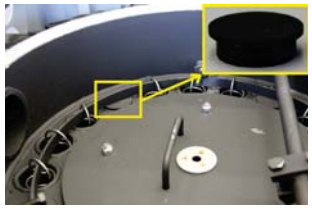
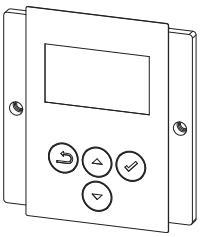
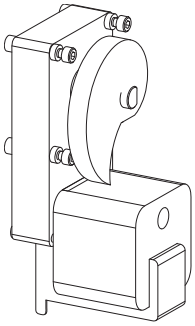
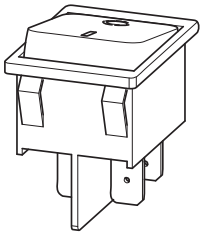
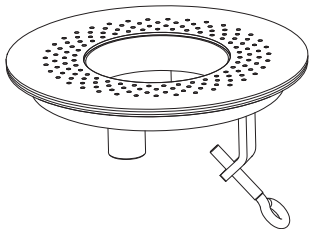
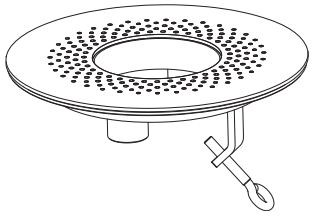
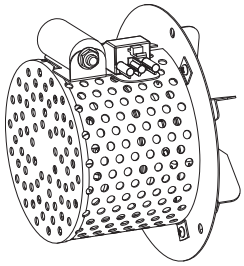
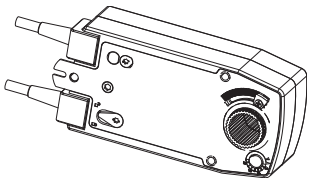
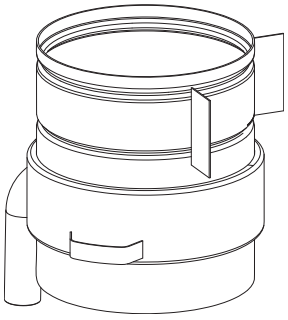
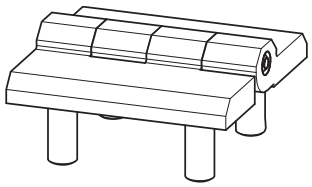
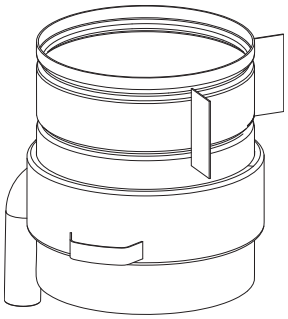
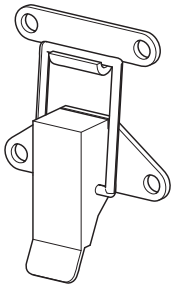
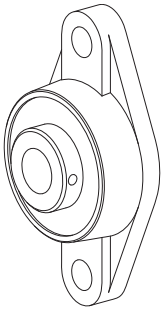
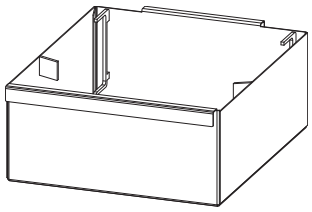
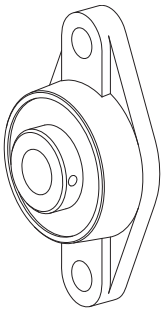
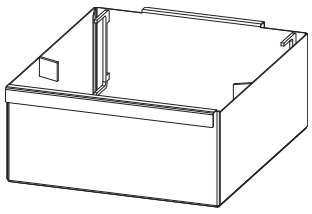
15 Spare parts

Art. Nr.		Art. Nr.		Art. Nr.	
200002 (16 KW)		B105		B144	
200015 (25 KW)		200004		E1005	
PE103		200005		E1204	
E1030		200007		E1073	
B101 (16 kW)		200006		121004	
B203 (25 kW)		E1001A		200027	

E1413E		PE273		PE523	
B103 (16 kW)		E1194		200029	
B104 (25 KW)		PE255S		200030	
121011 (UCF-L203)		24155		PE136 (16 KW)	
121010 (UCF-L204)		121198		PE136 (25 KW)	
E1004		E1049			

16 Technical data

Here you can find the technical data according to the boiler type.

Boiler – Type	**Easypell 16**	**Easypell 20**	**Easypell 25**	**Easypell 32**
Boiler-rated power [kW]	16	20	25	32
Boiler-partial load [kW]	5	6	8	10
Boiler efficiency rated power [%]	93,1	93,6	94,3	95,2
Boiler efficiency partial power [%]	91,2	92,0	93,0	94,4
Water area				
Water capacity [litres]	70		108	
Water supply/return Ø [inch]	1	1	5/4	5/4
Water supply/return Ø [DN]	25	25	32	32
Water resistance at 10K [mBar]	150	220	284	376
Water resistance at 20K [mBar]	38	55	72	95
Boiler temperature [°C]	69–90			
Boiler input temperature minimum [°C]	55			
Operating pressure maximum [Bar]	3			
Test pressure [Bar]	4,6			
Flue gas area (Flue gas = F.g.)				
Fire vault temperature [°C]	900 — 1.100			
Need of draught rated power [mBar]	0,08			
Flue gas temperature partial load [mBar]	0,03			
Suction draught necessary	yes			
Flue gas temperature rated power [°C]	160			
Flue gas temperature partial load [°C]	100			
F.g. volume rated power at f.g. tem. [kg/h]	28,2	37,6	45,1	52,6
F.g. volume partial load at f.g. tem. [kg/h]	9,4	11,3	13,5	16,2
F.g. volume rated power at AGT [m^3/h]	34,9	46,5	55,8	74,4
F.g. volume partial load at AGT [m^3/h]	10	12	14,4	17,2
Flue gas tube diameter [mm]	130		150	
Chimney diameter	**as per chimney calculation**			
Chimney construction	**Steel or ceramic lined, damp resistant**			
Fuel				

Colorific value [MJ/kg]	16,5 — 19			
Colorific value [kWh/kg]	4,6 — 5,3			
Bulk density [kg/m³]	>600			
Water content [weight %]	>10			
Ash parts [weight %]	<0,7			
Length [mm]	<40			
Diameter [mm]	6			
Weight				
Overall Weight [kg]	350		430	
Electrical Components				
Connection value	230 VAC, 50 Hz			
Main Drive [W]	40			
Drive Motor [W]	250 / 370			
Combustion Air Blower [W]	62			
Flue gas fan [W]	25			
Electrical Ignition [W]	250			
Cleaning Motor [W]	40			
Flame Return Gate [W]	5			
Emissions acc. to test reports				
O2-contents rated power [Vol. %]	7,8	7,6	7,5	7,3
O2-contents partial load [Vol.%]	12,4	12,2	11,5	10,5
Reference 10% O2 dry (EN303-5)				
CO rated power [mg/m³]	118	104	76	37
CO partial load [mg/m³]	132	125	134	146
OGC rated power [mg/m³]	3	3	2	<1
OGC partial load [mg/m³]	3	2	2	2
Dust rated power [mg/m³]	17	17	17	17
Reference 13% O2 dry				
CO rated power [mg/m³]	86	76	56	27
CO partial load [mg/m³]	95	91	97	106
OGC rated power [mg/m³]	3	2	2	<1
OGC partial load [mg/m³]	2	2	1	1
Dust rated power [mg/m³]	12	12	12	12
Accord. to § 15a BVG Austria				
CO rated power [mg/m³]	59	49	36	17
CO partial load [mg/m³]	62	59	63	69
NOX rated power [mg/m³]	69	71	73	77

NOX partial load [mg/m³]	70	69	66	62
HC rated power [mg/m³]	2	2	1	<1
HC partial load [mg/m³]	1	1	1	<1
Dust rated power [mg/m³]	8	8	8	8

Eco
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